The RUBBER AGE

Published TWICE-A-MONTH at New York

Vol. 20 NOVEMBER 10, 1926 No. 3

R. T. VANDERBILT CO.

INCORPORATED

50 East 42nd Street, New York

"AgeRite"—the Anti-oxidant

If you will, make mixes containing 2 percent, 1 percent, and ½ of 1 percent of "AgeRite" on the rubber content of your compounds, make ageing tests, and see for yourself that a small amount of "AgeRite" will give you satisfactory ageing results.

"AgeRite" is a strong anti-oxidant.

WAREHOUSES:

AKRON
Union Terminal Warehouse
East South & Brooks Sts.

BOSTON
Francis Fitz Company
30 Pittsburgh St.

CHICAGO
Midland Warehouse & Transfer Co.
43rd & Robey Sts.

SAN FRANCISCO
Haslett Warehouse Co.
60 California St.

TORONTO
Toronto Storage Co.
17 River St.

TRENTON
Anchor Warehouse Co.
N. Y. & Olden Ave.

SPECIAL GUAYULE RUBBER ISSUE

Reclaimed Rubber

For All Purposes

QUALITY

VALUE

SERVICE

RUBBER REGENERATING COMPANY

Largest Reclaimers in the World

(FOUR FACTORIES)

Naugatuck, Conn.

MISHAWAKA, IND. MONTREAL, CAN. MANCHESTER, ENG.

Announcing

THIONEX

Tetramethylthiurammonosulfide, the safe Ultra Accelerator

Unexcelled for white and light colored stocks!

A STABLE and non-toxic powder. Has much less tendency to cause scorching than any other accelerator of comparable activity. Write for further details on this new ultra accelerator.

E. I. du Pont de Nemours & Co., Inc.,
Dyestuffs Department, Sales Division,
WILMINGTON, DELAWARE
8 Thomas Street, New York, N. Y.

Vulcanization DU PONT **Accelerators**

The RUBBER AGE

Published Twice-a-Month by

The PALMERTON PUBLISHING CO., Inc.

225 Fourth Ave., N. Y. City

P. L. Palmerton, *President*

P. L. PALMERTON, *Editor*

PETER P. PINTO, *Business Manager*

Vol. 20 NOVEMBER 10, 1926 No. 3

Index to Contents

NEWS SECTION

British Make Changes in Restriction 111
Seiberling Makes Personnel Changes 112
Automobile Factories Slow Down 112
Bergougnan Sale Confirmed 112
Goodrich Combines in American Anode 113
Dwight to Purchase Tire Fabric Mills 113
Stadelman Memorial Unveiled 113
Average Tire Dealer Has Less Stock 114
Everlive Receiver Appointed 114
De Mattia Opens New Plant 114
Firestone Sales May Total $130,000,000 115
High Earnings for U. S. Rubber 115
Fisk Pays Back Dividends 115
Personal News Items 118
Cotton and Tire Fabric News 120

FEATURES and DEPARTMENTS

Editorial Comment 123
Cultural Problems of Guayule 129
The Chemistry of Guayule 133
The Production of Guayule 136
Guayule Rubber From Texas 139
The London Letter 141

MARKETS and STATISTICS

Current Statistics 149
Cotton and Fabric Market 147
Chemical and Compounding Materials 145
Rubber Markets—Crude, Reclaimed, Scrap 143

ADVERTISING INDEX .....Page 157
MARKET PLACE LISTINGS .....Pages 148, 150, 152, 154

Published on the 10th and 25th of each month by Palmerton Publishing Co., 225 Fourth Ave., N. Y. C. and Highland, N. Y. Address correspondence to N. Y. office. Subscription rates: Domestic, $2.00; Canada, $2.50; Foreign, $3.00. Single Copies, 10c.

Entered as Second Class Matter, June 10, 1920, at the Post Office at Highland, N. Y. under Act of March 3, 1879. Forms close 10 days before publication. If advertising proofs are desired, two weeks should be allowed. Advertising rates on application.

Contents Copyrighted 1926 by The Palmerton Publishing Co., Inc.

With the Editor

Practical rubber planters refuse to believe that there is any section of the United States where Hevea rubber can be grown commercially. Private and official experiments in Florida have been barren of encouraging results. The best the Department of Agriculture has been able to announce is that one Hevea tree has survived for twenty-five years in that state although it has not yet reached the size a tropical Hevea would achieve in four years. Any rubber to be produced within the continental United States must apparently come from a temperate zone plant. Accordingly, the entire American rubber trade is apt to take a genuine interest in the attempt to shift the guayule plant of Mexico and Texas from a wild to a cultivated basis. The experiments along this line have now reached a stage where the company undertaking them feels warranted in publishing in some detail the facts concerning their work and chances of success. The availability of such material for the first time has prompted the inclusion of a special guayule section in this issue. In addition to the discussion of guayule cultivation, the present status of the wild guayule rubber industry is reviewed, particularly that part which operates in Texas. Advertisements of the firms best known in the guayule trade also appear in the section.

The famous Fisk trade-mark stands for the utmost in tire values.

It represents a company with twenty-eight years of tire building experience - a company that has rigidly adhered to the best business principles.

Executive Offices—Fisk Building, New York City.
Commercial Offices—Chicopee Falls, Mass.

FISK
TIRES

Each the Leader in its Field—

BUFFALO — For volume production of highly competitive articles.
BLACK DIAMOND — For products with high quality the foremost consideration.
BISON SUPER-RECLAIM — For combating crude rubber cost, with maintenance of quality.

U.S. RUBBER RECLAIMING CO. Inc.
100 East 42 St. N.Y. Factory-Buffalo N.Y.

43 Years Serving the Industry- BISON *Solely as Rubber Reclaimers*

Akron Representative: F. F. Dugan, 617 Second Nat'l. Bank Bldg.

©CIB 715553

NOV 13 1926

The
RUBBER AGE

The Only Twice-a-Month Rubber Publication

VOL. 20 NEW YORK, NOVEMBER 10, 1926 No. 3

British Announce Many Changes in Restriction

Exports for Current Quarter Are Cut to 80% and New Rules Published for Year

A 20% tightening up in British Rubber Restriction went into effect on November 1 when the British Colonial Office announced that the London price of ribbed smoked sheet rubber had failed to average as much as 21 pence during August, September and October and that the penalty for such failure would be invoked as decreed last May. Accordingly, during November, December and January rubber producers in British Malaya and Ceylon will receive permits to export only 80% of their standard production. After February 1 the exportable allowance will be determined according to a new set of regulations promulgated by the Colonial Office on October 24 and printed elsewhere on this page.

The average London price for ribbed smoked sheets during the quarter ended October 31 was 1 shilling 8.1997 pence or 20.1997 pence, falling short of the demanded 21 pence by about eight-tenths of one pence or one and six-tenths cents in American currency. Although London and New York rubber prices shoved upward in the latter part of the quarter until the quotations passed 21 pence on several days during late September and October, the depressing effect of the low prices recorded in August obviously could not be overcome and there was no bull movement at the end of the quarter such as was seen in July when the average for that quarter was shoved one-thousandth of a pence beyond the required figure.

Since it had been apparent that the cut to 80% would be made on November 1, the rubber trade was much more interested in the October 24th pronouncement of the Colonial Office. At that time it was made known that restriction would be continued for another year on the basis of six new regulations which were included in the announcement. It was stipulated that there would be no deviation from those regulations during the year, and that the continuance or revision of the restriction program would be a subject of an announcement at the end of that time. This factor of knowing what the conditions will be over a period of twelve months was received with satisfaction, no matter how much the conditions may be disliked.

It had been expected that when the 80% basis went into effect on November 1, some definite announcement would be made concerning outstanding unused rubber export coupons and the revisions of the high standard production assessments which had made the excess coupons possible. However, it was November 4 when the Colonial Office announced its approval of the following rules:

The coupons issued before February 1 will be valid any time; those issued after February 1 in Ceylon will be valid for four months after date; those issued in Malaya will be valid six months after date, but for small Malaya estates there will be no time limitation.

The coupons now outstanding are estimated to cover about 34,000 tons of rubber. Since they are not to be cancelled, as shown by this dispatch from London, they will largely nullify the cut in the exportable percentage in the present quarter but it is likely that they will be used up when February 1 arrives and hence cease to be a factor after that date.

The expected announcement concerning a re-assessment of standard productions for rubber estates in Malaya and Ceylon had not been made up until November 6 and there is no certainty that the British Colonial Office intends to change the present standards at this time. A sharp reduction particularly in the case of the larger estates, has been ex-

[*Continued on next page*]

NEW RUBBER RESTRICTION REGULATIONS

The new rubber restriction regulations announced by the British Colonial Office on October 24 to be effective from November 1, 1926, to October 31, 1927, are as follows:

First—**If the average price of rubber in London is under 21d, but not under 15d, per pound during any quarter, the exportable percentage of standard productions for the ensuing quarter at the minimum rate of duty will be reduced by 10. If, however, the reduction thus effected is a reduction from the figure of 100 per cent, the reduced percentage for the ensuing quarter will be 80.**

Second—**If the average price of any quarter is not under 21d, but less than 24d, there will be no change in the ensuing quarter. If, however, in each of the three consecutive quarters the average price is not under 21d, then the percentage for the ensuing quarter will be increased 10 per cent.**

Third—**If the average price for any quarter is 24d or over, the percentage will be increased by 10 per cent for the ensuing quarter. If, however, the increase effectable under this regulation is an increase from 80 per cent, the increased percentage for the ensuing quarter will be 100.**

Fourth—**If the average descends below 15d in any quarter the percentage in the ensuing quarter will be reduced to 60 per cent.**

Fifth—**If the average exceeds 36d in any quarter the percentage in the ensuing quarter will be increased to 100.**

Sixth—**In no case will the percentage be increased above 100 or decreased below 60.**

SEIBERLING ANNOUNCES CHANGES IN PERSONNEL

It was recently announced by the Seiberling Rubber Company, Barberton, O., that C. A. Jones is now assistant sales manager, having been promoted from the post of sales manager of the Akron branch territory which includes western New York, western Pennsylvania, Ohio, Kentucky and parts of West Virginia and Indiana. Mr. Jones has been with the Seiberling company since its formation in 1921, going to the company after 12 years as assistant manager of mechanical goods sales for the Goodyear Tire & Rubber Co. Previously he was associated with the Pennsylvania Rubber Company.

Mr. Jones is succeeded as Akron branch manager by J. L. Cochran, who was formerly manager of the Seiberling branch in Detroit and previously on the sales staff of Goodyear. Four new branch managers have also been appointed: M. Fisher succeeds Mr. Cochran in Detroit; Howard Lowes becomes the branch manager at Cincinnati; F. A. Carlson goes to Minneapolis and Edward J. Rogers is now the branch manager at Kansas City.

F. A. Seiberling, president of the Seiberling company, also announced that the factory is on a three-shift a day basis and that there is no indication that production will be curtailed during the next few months. He said that the company has had considerable difficulty in increasing production to a point where it is sufficient to care for demands.

COURT CONFIRMS SALE OF BERGOUGNAN PLANT

Federal Judge Runyon sitting in Trenton recently confirmed the sale of the factory, property and equipment of the Bergougnan Rubber Corporation, East State St., Trenton, N. J., to the Citron-Byer Company. The consideration was $118,230. Purchase price of the land and buildings was $90,000, with the purchaser assuming the obligation of paying taxes running back to July 1, 1925. A plot of five and one-half acres on which no buildings stood was sold for $21,500 under a similar agreement for the payment of back taxes. Machinery, furniture and fixtures brought $6,730. The Court confirmed the sale on the application of Bilder & Bilder, acting as counsel for Charles E. Stokes, equity receiver.

Malayan Gift to Wickham

The government of British Malaya has arranged to present a honorarium of approximately $39,000 to Sir Henry Wickham in recognition of his services to the rubber industry. It is believed that this gift, being added to others recently announced, will provide satisfactorily for the comfort of the veteran explorer. The news of the action of the Malayan government comes as particularly welcome news to Quincy Tucker of Boston who, it is generally conceded, has been responsible for several of the substantial gifts made to Sir Henry in the past. Mr. Tucker began to urge in 1908 that a suitable reward be given to the "father of the rubber plantation industry."

KEYSTONE TIRE FORMS A JOBBING SUBSIDIARY

The Keystone Tire & Rubber Co., New York, recently organized the Keystone Clearance Company, a subsidiary to carry on a tire jobbing business. The parent company will retain 20 per cent of the total stock of the new company as consideration for a contract under which it will provide operating facilities and perform operating functions.

The authorized capitalization of the new company is 250,000 shares of no par value, of which 100,000 will be offered to stockholders of the parent company at $5 a share. Subscription books will close Dec. 22, 1926, after which there will be a public offering at not less than $7.50 a share.

Rubber Restriction Revised

[*Continued from previous page*]

pected since the exports have fallen so far short of the standards. The surplus coupons of course indicate the margin by which the plantations failed to meet their estimated output. If the standard production is not cut, it will greatly soften the effect of the reduction in exportable percentage. The total standard for Malaya and Ceylon is now in the neighborhood of 310,000 tons.

Simultaneously with the publication of the new rubber restriction regulations, the Department of Commerce issued a statement reviewing the four years of restriction and hinting that the imposition of new and stricter rules might mean a renewal of the Department's fight, particularly along the lines of rubber conservation. No further action has followed, however.

In general, the rubber trade in the United States received the new regulations philosophically. F. R. Henderson, president of the Rubber Exchange, expressed the opinion that the trade would be benefitted by the knowledge that certain basic conditions would not be changed for an entire year. The Rubber Association made no statement.

Rubber trading in New York was rendered exceedingly nervous during the first week in November by the hourly expectation of a British decision in the matter of unused coupons and reassessments. The pronouncement on the former, coming as it did in a roundabout way via the East, was suspected of being incomplete while the trade could not warrant the possibility that no definite statement on reassessment would be forthcoming. Ribbed smoked sheet prices early in the month hovered just below 42 cents.

AUTOMOBILE FACTORIES CURTAILED IN OCTOBER

Curtailment of production was in progress at many automobile factories in October, a natural reaction after the record high levels of August and a prelude to the slack sales season now beginning. Thus far, nevertheless, there is no evidence that the recession is more than normal. There is a confident feeling among automobile manufacturers that the winter market will be at least one of average demand, and that it will be possible to maintain a fair rate of production during the next three months. An element of strength for most of the large manufacturers is that stocks of their dealers are not high. Additions to cars on hand have been made in the last eight weeks, but not to an unsound extent.

Although the exact figures for October were not available up to the time of this writing, the Department of Commerce announced two weeks ago that September production of motor vehicles in the United States was 397,123, of which 350,811 were passenger cars and 46,312 were trucks. These figures compare with 426,626 passenger cars and trucks in August, 1926, and 321,857 in September, 1925.

September production brought the total for the first nine months of 1926 to 3,118,461 passenger cars, against 2,695,057 during the corresponding period of 1925. It brought the total for the nine months to 385,888 trucks, compared with 363,505 in 1925.

The figures are based on reports received from 172 manufacturers, 65 of which make passenger cars, 124 produce trucks and 17 both passenger cars and trucks.

TWO CLAIMS REJECTED ON CORD TIRE PATENT

The Board of Examiners of the U. S. Patent Office recently sustained the Examiner's rejection of two claims in the application of Thomas Midgley for an improvement in method and machines for making cord tires. Although Mr. Midgley was granted Patent No. 1,603,855 Oct. 19, 1926, upon an application filed March 20, 1919, two claims were rejected as being anticipated in prior art.

The decision of the Board grew out of an appeal made by Mr. Midgley on the rejection of Claims 11 and 12 by a primary Examiner, and the Board relied upon two claims rejected in a patent granted to Fording, No. 1,422,046, July 4, 1922, as a basis for the affirmation of the Examiner's decision.

To Speed Up Production

As a result of the purchase of property adjoining its plant, the Akron Standard Mold Company, Akron, recently announced through A. J. Fleiter, vice-president and general manager, that changes will be made in the layout of the factory in order to speed up production.

GOODRICH COMBINES IN AMERICAN ANODE

B. F. Goodrich Company, Eastman Kodak and Anode Rubber Co., Ltd., Announce Formation of American Anode, Inc., to Develop Electrodeposition of Rubber.

Organization of a new corporation, American Anode, Inc., by the B. F. Goodrich Company, Eastman Kodak Company and Anode Rubber Company, Ltd., of Great Britian, was recently announced. It will be the function of the new company to develop commercial production of rubber goods in the United States under the Klein and Eastman patents for the electrodeposition of rubber.

The processes covered by these patents are the result of the work of Dr. Paul Klein of Budapest and Drs. S. E. Shepherd and L. W. Eberlin of the Eastman laboratory staff. It is claimed that in many cases the processes practically revolutionize present-day methods of compounding, milling and vulcanizing rubber. The new company draws into one holding all developments and United States patents of all three interests.

The principle of the processes controlled by American Anode, it was announced, is the electrolytic desposition of rubber on the anode which serves as the mold or form. Not only methods of suspending compounded ingredients in the latex, but means for maintaining a constant concentration of the latex mixture, without which the commercial development of the process was impossible, have been perfected.

It has long been known that the milling process in rubber manufacture destroys to a certain extent the original physical properties of the tiny globules of rubber. The mastication of the raw coagulated rubber necessary to break it up and permit thorough compounding bruises the rubber particles and destroys much of their natural adhesion and strength. The new processes, however, are said to preserve the original qualities of the rubber, which is compounded and molded without heat. Greater durability and strength are therefore claimed for the rubber articles produced by these processes.

The processes have been used in the factory of the Ungarische Gummiwarrenfabriks Actiengesellschaft, Budapest, under the direction of Dr. Paul Klein, and thorough tests have been made in America in the laboratories of both the B. F. Goodrich Company and the Eastman Kodak Company.

Directorate of American Anode, Inc., includes Julius Klein, vice-chairman of the Hungarian General Credit Bank, Budapest; Howard Sachs, of Goldman, Sachs & Co., New York; W. G. Stuber, president of the Eastman Kodak Company; F. W. Lovejoy, vice-president of the Eastman company; B. G. Work, president of the B. F. Goodrich Company and F. C. Van Cleef, secretary of the Goodrich company.

B. G. Work serves as chairman of the board of directors; Julius Klein, vice-chairman and president; F. C. Van Cleef, vice-president and secretary and F. W. Lovejoy, treasurer.

American Anode, Inc., will have offices at 1780 Broadway, New York City, as well as at Akron, Ohio, where commercial development of the processes will be undertaken immediately in the Goodrich factories.

Readers of THE RUBBER AGE will remember announcement was made by the B. F. Goodrich Company last April that the company's engineers had worked out a process by which vulcanization of rubber to metals was successfully accomplished. The process, which was christened "Vulcalock," is thought to be of particular advantage in coating metal products likely to be subjected to abrasive wear, as well as of advantage in the building of solid tires.

Stadelman Memorial Tablet Unveiled in Akron

G. M. STADELMAN
IN MEMORIAM
A GREAT INDUSTRIAL LEADER AND A MODEST CHRISTIAN GENTLEMAN; A MAN OF SIMPLE HABITS AND HIGH IDEALS; EXPONENT OF THE VIRTUES OF INDUSTRY, HONESTY, SINCERITY, COURTESY, FRANKNESS, CHARITY, COURAGE; A MEMBER OF THE OFFICIAL FAMILY OF THE GOODYEAR TIRE AND RUBBER COMPANY FROM 1902 TO 1926 AND PRESIDENT OF THE COMPANY FROM 1923 UNTIL HIS DEATH
THIS TABLET IS ERECTED IN AFFECTIONATE MEMORY BY THE EMPLOYES OF THE COMPANY UNDER THE AUSPICES OF THE GOODYEAR INDUSTRIAL ASSEMBLY
1922 1926

THIS BRONZE tablet, erected by factory workers of the Goodyear Tire and Rubber Company in memory of the late George M. Stadelman, president of Goodyear, was recently unveiled in Goodyear Hall, the employees' recreational center at the factory in Akron. The funds for the erection of the tablet were raised entirely by workers in the Akron plants of the company. Mr. Stadelman was an executive of Goodyear for more than 20 years. He died in Akron, Jan. 22, 1926.

E. B. Fulper

E. B. Fulper, aged 66,, died in his home at Trenton, N. J., Oct. 24, having been ill since June. Mr. Fulper was vice-president of the American Oil & Supply Co. of Newark and Trenton, and had previously been associated with the Standard Oil Company. For a number of years he had specialized in chemicals and compounding materials for the rubber industry and had also been connected with the Northwestern Rubber Company as an executive.

R. A. Has New Numbers

The telephone numbers of the offices of the Rubber Association of America in the Fisk Bldg., New York, are now Columbus 3125-26-27-28-29, having been changed Nov. 6.

DWIGHT TO PURCHASE TIRE FABRIC MILLS

The Essex Cotton Mills, Newburyport, Mass., which have for years been manufacturing tire fabrics, will be purchased and moved to Alabama City, Ala., by the Dwight Manufacturing Company, Chicopee, Mass., and Alabama City, according to an announcement recently made by the latter company. The Dwight company plans to issue $2,000,000 additional of its $25 par value authorized but unissued stock.

The earnings of the Dwight company, it was pointed out, have been and still are unsatisfactory at Chicopee, Mass., but the plant at Alabama City has consistently made money, and it is in the hope of further increasing these earnings that the present plan has been adopted.

The Essex Cotton Mills were incorporated under the laws of Massachusetts Sept. 21, 1923, after the company had acquired the mills at Newburyport, Mass., formerly owned and operated by the American Tire Fabric Company.

Consumers to Open New Unit

Consumers Rubber Refining Company, Inc., Elizabethport, N. J., which recently began production, reports that it has received sufficient orders to maintain output at full schedule for some time. About 45 men are employed at present in washing and refining crude rubber and an additional unit of 12,000 square feet is being equipped to care for sole crepe.

Officials include R. W. Patrick, president; R. H. Brawley, vice-president; M. J. Anderson, treasurer; M. S. Azulay, superintendent; F. G. Conklin, general sales manager and E. K. Moy, advertising manager.

De Mattia Brothers Open New Plant

A new machine shop equipped completely with modern tools has been opened by De Mattia Brothers, Inc., manufacturers of cores, chucks, molds and other equipment for tire factories. The new plant is located between Passaic and Paterson, New Jersey, on the main line of the Erie Railroad. By reason of the new facilities and their convenient location, the company expects to be able to render improved service to its many clients; it was established in 1909.

RECEIVER APPOINTED FOR EVERLIVE RUBBER

Henry Young, Jr., an attorney, was recently appointed custodian receiver for the Everlive Rubber Corporation, 28 Cherry St., Newark, N. J., by Vice-Chancellor Church on application of Barney Larkey, counsel for the General Machinery Company, Newark, a creditor. The order of appointment stated that on July 8 last the Everlive company obtained a license to do business in New Jersey. It is alleged that the officers of the company held a meeting on Oct. 21 at which they told creditors that the firm was insolvent, having assets of about $1,500 and liabilities of $3,000.

The Everlive Rubber Corporation was formed early this summer under the laws of the State of New York with a capitalization of $600,000 and leased the building at 28 Cherry St., Newark, for a term of years. The company undertook the manufacture of artificial rubber which, it is claimed, was discovered in the laboratories of the Syra-Cord Tire & Rubber Company, Syracuse, N. Y. This company also filed a petition in bankruptcy late in October. No details as to the base or details of the manufacture of the artificial rubber were divulged at the time the Everlive company was organized. N. H. Truett is president and E. L. Livinston, vice-president. The latter is understood to have been the inventor of the synthetic rubber.

POWERTON TIRE FACTORY AUCTIONED FOR $20,000

Charles Walters, who has been manager of the plant for the past year, recently bought the building, land and equipment of the Powerton Tire Corporation, 253 East Ave., Rochester, N. Y., at public auction. Mr. Walters was the highest of only three bidders. It is said that the money realized from the sale will be sufficient to pay holders of bonds of the defunct company approximately eight cents on the dollar. The sale was made under the direction of William J. Maloney, referee.

The property includes a brick building, all machinery and equipment, two trucks and vacant lots adjoining the factory. No future plans were announced by the purchaser.

GOODYEAR SUIT STARTS IN COMMON PLEAS COURT

An imposing array of counsel appeared before Judge Scott D. Kenfield in Common Pleas Court in Akron Nov. 5 at a hearing on a motion to reopen litigation affecting the 1921 refinancing plan of the Goodyear Tire & Rubber Co. The case was scheduled to be heard Oct. 19 but was continued until Nov. 5. Frank C. Tomlison, a stockholder, is seeking to reopen the Laura L. T. Weiss suits attacking the validity of Goodyear's 1921 plan, which was settled in 1923. He is represented by three law firms. Goodyear counsel is headed by Newton D. Baker, former Secretary of War.

BOSTON TIRE DEALERS HOLD FIRST BANQUET

The Boston Tire Dealers' Association commemorated its first anniversary on October 28 with a banquet served in the auditorium of the Boston Chamber of Commerce Building. Among the speakers was George J. Burger, secretary and treasurer of the National Tire Dealers' Association, Jerome T. Shaw, editor of *Tires*, and E. B. Gallaher.

R. & H. Announces "Thermlo"

"Thermlo", a new low temperature, short cure, high quality accelerator developed in the research laboratories of the Roessler & Hasslacher Chemical Company, 709 Sixth Ave., New York, was recently announced. The accelerator is being introduced to the rubber industry through the R. & H. Service Department.

AVERAGE TIRE DEALER NOW HAS LESS STOCK

Final Report of Commerce Department on Tire Dealers' Stock Survey Reveals that Fewer Casings, Tubes and Solids Are Held This Year.

The average tire dealer holds 6.7 less automobile casings, 5.3 less inner tubes and 1.1 fewer solid tires this autumn this year than he held a year ago, according to the final statistics resulting from the stock survey of the Rubber Division, Department of Commerce. The average dealer is reported to have had 49.9 casings on October 1 of this year as compared with 56.6 last year. The preliminary figure for this year was announced as exactly 48 but returns received before the final report was ready shoved the figure up to 49.9 casings.

The final report shows that the percentage of dealers handling balloon casings has increased from 46 to 63.3 per cent within the year. A year ago 14.2 per cent of the tires in stock were balloons; now 25.9 per cent are of that type. The average dealer is now carrying 1.88 tubes to each casing stocked.

This year the Rubber Division received usable reports from 37.439 dealers, an increase of more than 2,000 over the number who furnished such data last autumn. A further trend toward specialization in handling one line of tires was indicated in the replies, almost 45 per cent saying that they handled only one line.

The Rubber Division made a special analysis of dealers according to types of business for the first time which reveals that the dealers with the fewest tires on hand are those selling a number of additional lines such as automobiles, gasoline, and batteries.

The following is a detailed comparison of the tire dealers' stock survey of October 1 this year with that of a year ago:

	October 1, 1926			October 1, 1925		
	Number	Dealers Reporting	Average per Dealer	Number	Dealers Reporting	Average per Dealer
Total Casings	1,866,770	37,439	49.9	2,000,150	35,331	56.6
Balloon Casings	483,896	24,454	19.8	283,552	16,240	17.5
Inner Tubes	3,465,310	36,947	93.8	3,486,120	35,163	99.1
Solid Tires	47,560	1,992	23.9	53,060	2,122	25.0

The complete report of the Rubber Division covers ten mimeographed pages. Copies may be had by rubber companies upon request.

Mason Leases Branch

The Mason Tire Rubber Co., Kent, Ohio, recently leased the store at 242 North Third St., Columbus, Ohio, for a term of years. A direct factory branch will be established at that address.

CATALPO!

FIRESTONE SALES MAY TOTAL $130,000,000

Although the Company is Now Closing the Best Twelve-Month Period in its History, Profits are Not Expected to be as Large as Those Shown Last Year.

In October the Firestone Tire & Rubber Co., Akron, closed the best twelve-month period in the 26 years since its formation, and although the official statement is not yet available, sales of the parent company and subsidiaries in the United States are expected to aggregate over $130,000,000. This will compare with sales of $125,598,000 in 1925 and with $85,610,000 in 1924.

As a result of the increased sales, inventories as of Oct. 31, 1926, will run somewhat over those of 1925, which totaled $21,254,000. It is expected that they will exceed that figure by about 15 per cent. However, the company will have a strong cash position, anticipated to be well over that of $5,470,000 as of Oct. 31, 1925. In common with other large rubber companies, the Firestone company found it desirable to finance last winter, and sold $10,000,000 worth of additional 7 per cent preferred stock. Thus, for the third successive year it will be free of bank debt.

No estimate of profits was available at the time of this writing, but it was thought that the Firestone company would show a reduction in profits proportionate to that being experienced by other large rubber manufacturers. It is not expected that net profits of $12,800,000, or $32 a share on common stock, earned in 1925, will be approached. A "general contingencies reserve" of $5,000,000 was set aside at the end of the last fiscal year.

Goodrich Declares Dividends

At a meeting of directors of the B. F. Goodrich Company Oct. 27 a dividend of $1.75 per share on the outstanding preferred stock was declared, payable Jan. 3 to stockholders of record Dec. 15. A dividend of $1.00 a share on the common stock of no par value was also declared, payable Dec. 1 to stockholders of record Nov. 15.

FISK PAYS ALL BACK PREFERRED DIVIDENDS

Directors of the Fisk Rubber Company, Chicopee Falls, Mass., on Oct. 27 declared a cash dividend of $35 a share on the second preferred stock. This action clears up all accumulated dividends on the $995,800 seven per cent stock issue. The dividend will be paid Dec. 1 to stockholders of record Nov. 15. Officials announced that the company is now free of all past due capital obligations. The Fisk company closed its fiscal year Oct. 31 free from all bank obligations, with a ratio of quick assets to liabilities of at least 10 to 1, it was reported.

N. J. Zinc Declares Dividend

The New Jersey Zinc Company recently declared an extra dividend of 50 cents a share, payable Dec. 1 to stockholders of record Nov. 15. Net income of the company for the third quarter was reported as $1,673,823, equal to $3.41 a share on $49,081,600 capital stock.

DISCUSSES GOODYEAR PLAN FOR REFUNDING

President P. W. Litchfield in Letter to Stockholders Advises them Not to Give Proxies and Discusses Refunding of Accumulated Preferred Dividends.

In a recent letter to stockholders and holders of voting trust certificates P. W. Litchfield, president of the Goodyear Tire & Rubber Co., Akron, advises them to decline to give proxies or to deposit stock with "any self-constituted committee from which they may receive communications" in connection with the funding of the accumulated preferred dividends.

He wrote that on Aug. 18 he told them of various plans for adjustment of the deferred dividends, at that time amounting to $29.75 and totalling more than $19,300,000. A plan designed to "conserve the company's cash resources and thus to place the company in a stronger position with respect to dividends on preferred and common stock through a large reduction in the existing annual sinking fund charges" was presented to the directors on Oct. 4, he said. Conferences with the voting trustees of the preferred and common stock were held, and the results reported to the directors on Oct. 14.

"From the facts disclosed in such report," Mr. Litchfield wrote in the letter, "and from my general knowledge of the situation, I am of the opinion that if the controlling majority of the common stock voting trustees adhere to their views now expressed, no plan for refunding the senior securities and working out an adjustment between preferred and common stockholders can be accomplished except at the price of maintaining the common stock voting trust. The holders of the management stock have expressed not only willingness but a desire to have accomplished a refunding of the senior securities and an adjustment between preferred and common stockholders provided the common stock voting trustees will likewise dissolve their trust."

HIGH EARNINGS SEEN FOR U.S. RUBBER CO.

From Present Indications, it is Expected that United States Rubber Company will show a Net Income of Approximately $9,000,000 for the Year.

It is confidently believed in financial circles that sales and earnings of the United States Rubber Company for the third quarter, ended Sept. 30, were maintained at the average for the two preceding quarters. For the six months up to June 30, the company reported net sales of $100,113,986 and net income after all charges and taxes of $4,915,668, equivalent to $2.85 a share on the 810,000 shares of common stock outstanding after preferred dividend payments.

If operations in the third quarter equaled the average for the two preceding quarters, it is estimated that sales for the three months were about $50,000,000 and net income close to $2,000,000, or about $1.00 a share in the common stock after allowing for senior dividends. Should operations for the final quarter equal those of the third quarter, the United States Rubber Company will show a net income of approximately $9,000,000, or in the neighborhood of $5.00 a share on common stock.

Plantation Earnings Large

Earnings of the General Rubber Company, the plantation subsidiary, for the first half of 1926 were reported at about $4,000,000, to which approximately $1,000,000 was added in the September quarter. As it is expected that close to $1,000,000 will be earned during the last three months, the total earnings of the plantation company will be about $6,000,000, or the equivalent of approximately $7.50 a share on the parent company's stock. At the end of 1925 the plantation subsidiary had a surplus of more than $7,000,000, but this sum has not as yet been actually transferred to the books of the United States Rubber Company.

It is pointed out that the earnings of the United States Rubber Company for the year 1926 will depend to a great extent on inventory adjustments necessary as of Dec. 31, and these adjustments in turn will be largely based upon the selling price of crude rubber at that time. Thus, should the price of crude rubber at the end of the year be around 50 cents a pound or better the company will have practically no inventory write-down, but if the price of crude rubber remains below the 50 cent level, it is probable that necessary inventory write-offs will reach levels sufficiently high to absorb a material portion of the earnings for the final half.

USE "Sunny South"
"Pentarco"
"American"

[Thoroughly Established Brands]

RETORT PINE TAR
in
Tires - Tubes - Mechanicals - Reclaim
The Best Softener
with
Ten distinct functions
on which
We will gladly give information

Sold By

E. W. COLLEDGE
General Sales Agent
P. O. Box 356
Jacksonville, Fla.

J. C. MATHEWS
Eastern Agent
300 Madison Ave.
New York City

THE TYLER PATTERSON CO.
Cuyahoga Bldg.
Cleveland, Ohio

S. S. SKELTON
Western Agent
1605 Kimball Bldg.
Chicago, Ill.

THE HARSHAW FULLER & GOODWIN CO.
545 Hanna Bldg.—Cleveland, Ohio

CHEMICALS - COLORS - PIGMENTS
For
RUBBER MANUFACTURERS

GLYCERINE

Lead Oleate — Litharge
Chromium Oxide — Red Lead

ANTIMONY SULPHURET

Blanc Fixe — Hydrated Lime

Heavy Calcined—MAGNESIA—Carbonate
Pine Tar — Rosin Oil

"Silver Sheen" — MICA — "Diamond"

WAREHOUSES
Cleveland - New York - Philadelphia
Chicago - Elyria - Trenton

RECLAIMED RUBBERS

UNIFORM — RED BLACK GREY — RELIABLE

THE DEFIANCE RUBBER COMPANY
DEFIANCE, OHIO

CLYDE E. LOWE CO.

2976 East 81st. St. — Cleveland, Ohio

MANUFACTURERS OF
CIRCULAR INNER TUBE MANDRELS
AND
ECONOMY CALENDER SHELLS

Prompt Service — *Let Us Quote You*

GOODRICH STARTS WORK ON BUILDING IN MIAMI

Work was recently begun on the construction of a $35,000 office and branch of the B. F. Goodrich Company at 150 N.E. Seventh St., Miami, Fla., according to J. R. Manoe, branch manager. A two-story building of Spanish architecture, containing 10,000 square feet of floor space, is expected to be completed in December. The building will face 50 feet on Seventh St. and extend back 105 feet.

When the new building is completed, Miami will be the distributing point for Goodrich of all southeast Florida. The branch expects to do more than a $1,000,000 business with the added facilities.

"Reports from the Akron office of the Goodrich company show that more business was done in Miami during September than in any other city in the United States with twice the population," Mr. Manoe said. "Rather than finding that business is falling off, we are doing a bigger business every day."

Overland Trail Elects

Stockholders of the Overland Trail Rubber Company, Omaha, Neb., at a meeting held at the factory Oct. 13 elected the following directors: C. Y. Thompson, J. M. Grace, Fred Harms, F. J. Grace, C. P. Pebler, Philip Graff, Carl Sonderegger, George M. Tunison and J. H. Davies. At a subsequent meeting the directors re-elected George M. Tunison president.

Mr. Tunison gave out a long statement to the press following his election, in which he said in part:

"Up to Jan. 1, 1924 the company had made no profit, but at the end of 1924 our books showed a net profit of $24,416, which was increased to $110,000 in 1925, and for the nine months of 1926 was $136,071. We also have increased our working capital out of the earnings and have paid one dividend."

Denying rumors to that effect, Mr. Tunison said, "I have no intention and never had of consolidating the Overland company with the Crown Rubber Company, of which I am also president."

Nat Berzen Leases Building

Nat E. Berzen, a scrap rubber dealer with offices at 232 South St., New York, has taken a lease with option to buy on the building formerly occupied by the Akron Storage & Contracting Co., Elinor Ave. and the A. C. & Y. railway, Akron, Ohio. Mr. Berzen intends to use the building for the storage of scrap rubber for sale to reclaiming plants in Ohio. The structure contains 20,000 square feet of floor space and is located on a tract of one and a half acres. It has a spur track on the A. C. & Y. railroad.

Visit Reclaiming Plant

Following a dinner in the Masonic temple in Barberton, Ohio, members of the Lions recently visited the factory of the Akron Rubber Reclaiming Company where they made a tour of inspection.

Coats Joins Firestone

Harry P. Coats recently resigned his position on the staff of the chemistry department of the College of the City of New York to join the Firestone Tire and Rubber Company at Akron where he will do research work.

SEES SURPLUS OF SCRAP REDUCED IN FEW YEARS

F. R. Henderson, president of the Rubber Exchange and of Henderson, Helm & Co., Inc., New York, believes that the introduction to a paragraph on Page 60 in our last issue may have proven misleading to readers of THE RUBBER AGE and has pointed out that his views on the depletion of the supply of scrap rubber are more exactly explained in the following quotation: "In three or four years the present surplus stock of scrap tires in the country will have been exhausted, so that the use of reclaimed rubber in the future will necessarily be limited by the annual scrapping of tires."

CATALPO!

EXPERIENCE

Huber pigments have been in use all over the world since 1780.

For over ten years we have been making carbon black for the rubber industry.

J. M. HUBER, INC.

CARBON BLACKS ⤷ CLAYS ⤷ DRY COLORS

130 West 42nd St., New York City

Branches in Principal Cities in U. S. and Foreign Countries

Personal Items-

H. L. McClaren, president of the McClaren Rubber Company, Charlotte, N. C., was a visitor in Oakland, Cal., recently. Accompanying him were Lee S. Woodruff, general sales manager, and H. E. Williams, Pacific Coast manager. Mr. McClaren is combining a business and pleasure trip on the coast and while there will make the rounds of the distributors handling McClaren tires.

* * * *

George B. Smith, president of the George B. Smith Chemical Works, Springfield, Ill., producers of mineral and chemical colors for the rubber and paint industries, was recently in New York visiting Wishniek Tumpeer, Inc., 251 Front St., the sole distributors for Smith colors in the rubber trade.

* * * *

S. P. Thatcher, vice-president of the United States Rubber Company, was a recent visitor in Portland, Ore. Mr. Thatcher is the designer of the U. S. Royal Cord tire and is said to have been the first to suggest a name for balloon tires.

* * * *

Claud E. Sims, president and general manager of the Sims Tire Company, 618 West Adams St., Jacksonville, Fla., with branches in Miami, Tampa and St. Augustine, recently returned from a visit to the factory of the Marathon Rubber Company, Cuyahoga Falls, Ohio.

* * * *

A. Z. Witte, who has been connected with the branch for the last two years, has been made manager of the Goodyear Tire & Rubber Co., factory branch at Evansville, Ind. He succeeds G. C. Young, who has been transferred to the sales department of the Cincinnati office. Douglas Bell has been promoted to assistant manager at Evansville.

* * * *

P. H. Ober, vice-president of the Mansfield Tire & Rubber Co., Mansfield, Ohio, and president of the Central Ohio Manufacturers Association, presided at the bimonthly meeting of the Association, held at the Mt. Vernon Country Club on October 19.

* * * *

Dr. W. J. Kelly of the research laboratory of the Goodyear Tire & Rubber Co., spoke on the "Constitution of Rubber" at the October meeting of the Cleveland Section, American Chemical Society. The meeting was held October 26 in the physics laboratory of Case School, Cleveland, Ohio.

* * * *

Marquis M. Converse, founder and president of the Converse Rubber Shoe Company, 392 Pearl St., Malden, Mass., celebrated his 65th birthday on Oct. 24 by going about his duties with the same vigor he displayed 20 years ago. Mr. Converse lives in Andover, but founded the company in Malden in 1908. Early in life he formed the rubber jobbing firm of Converse and Pike, Boston, and after 16 years was obliged to take a three year's rest due to ill health. Later he joined the Beacon Falls Rubber Shoe Company, Beacon Falls, Conn., where he was treasurer for 12 years.

* * * *

Charles J. Ellmers, who was formerly purchasing agent for the Lake Erie Bolt & Nut Co., has become associated with the Anderson Rubber Co., Akron, manufacturers of toy balloons, in a similar capacity.

* * * *

Millard L. Calwell, formerly a chemist at the factory of the Firestone Footwear Company, Hudson, Mass., recently resigned to accept a position as chief chemist of the Continental Mexican Rubber Company. He will be in charge of the laboratories at Torreon, Mexico.

IT PAYS TO MICRONIZE

RESISTANCE

ELECTRIC cables of braided fabric were formerly used in mines, mills and factories under more severe conditions than they were made to withstand. Poor service inevitably resulted. Now rubber covered cable has proven best for this purpose. It is unaffected by scraping, dragging and straining or the destructive action of water, oil or acids.

Such rubber covered cable is supreme if compounded with sufficient percentage of

MICRONEX

Reg. U.S. Pat. Off.

The World's Standard Gas Black

which renders the cable tough and resistant to the greatest possible degree. Our service department will be glad to work with electrical cable manufacturers who wish to incorporate into their products the greatest possible resistance to wear.

Samples and quotations upon request.

Binney & Smith Co.
41 E. 42nd Street-New York City

CATALPO!

RUBBER SITUATION NO BETTER, SAYS DAVIS

Rubber Planter Recently Returned from Philippines Urges that Oil, Auto and Rubber Industries Unite in One Program —Withholds Philippine Views.

In an address before the Kiwanis Club of Brockton, Mass., on October 25, Edgar B. Davis, pioneer American rubber planter who recently returned from an investigation of Philippine rubber lands, told his audience that he could find no evidence that the United States is now any nearer a solution to its crude rubber problem than it was a year ago. Mr. Davis suggested that the situation, particularly in view of the continuance and method of British rubber restriction, deserved immediate attention by American business men and urged that the oil, automotive and rubber industries join in a move to secure an equitable share in the rubber plantation industry.

It had been expected that Mr. Davis would speak in some detail of the findings of his recent Philippine investigation, but he spoke only briefly along that line. He explained his silence on the Philippine question by saying that Carmi Thompson, special investigator of the President, would soon be rendering a report of his trip and that he would not advance his personal views in advance of Colonel Thompson's recommendations. Mr. Davis did say, however, that it appeared impossible to divorce the economic aspects of rubber growing in the Philippines from politics, and expressed the hope that the questions of rubber growing and Philippine independence would not be confused but be handled on their separate merits.

Although he emphasized the necessity for conceding Great Britain an ample return for the vision and energy which is back of the present plantations, Mr. Davis criticized the continuance of governmental control, particularly at an advanced pivotal price, after the plantations had been returned to a profitable basis.

"A great deal has appeared in the press," Mr. Davis said, "about what this, that or the other organization or company was doing. It makes interesting reading, but the facts are that nothing is under way that gives the slightest hope to America of securing immunity in anything like the near future from such additional expenditures for crude rubber as have been exacted under the Stevenson Act.

"The losses of the last few years, if invested in plantations under proper direction and management, would secure for us freedom from exploitation from the foreign legislative action, which, however well intended, has enforced tribute directly or indirectly from every citizen of this country. I do not wish it understood that I am taking a hostile attitude to the British, for as I said before, they are entitled to ample compensation for developing this great industry. As a friend of Great Britain, I want to record my belief that she is making a mistake in not giving more consideration to the welfare of her best customer. . . .

"I want again to emphasize the danger of the press and public being lulled into a false sense of security by inaccurate, misleading publicity. So far as I am able to learn, nothing of consequence from a national standpoint is being done. The danger to America is just as great as it was a year ago."

SEPTEMBER GOOD MONTH FOR MANHATTAN RUBBER

Sales of the Manhattan Rubber Mfg. Company, Passaic, N. J., in September almost eclipsed the highest monthly record the company has had in recent years. September sales amounted to $1,227,478, compared with $1,182,557 in August and $1,067,805 for Sept., 1925. The highest recent figure was set last March when sales aggregated $1,306,795. September was the seventh consecutive month with sales in excess of $1,100,000. Sales for the nine months ending Sept. 30, 1926, were $10,189,981, an increase of $1,364,915 over sales of $8,824,976 in the corresponding period of 1925.

CATALPO!

THE NAUGATUCK CHEMICAL COMPANY NEW YORK

Materials for the Rubber Goods Manufacturer

THE products listed below are being furnished regularly to the manufacturers of rubber goods. This large number of active materials shows the close attention given to the needs and interests of the Rubber Trade.

HEPTENE	—Accelerator for tubes, tire carcass, rubber bands, and pure gum goods generally.
MONEX	—Ultra-accelerator for general use.
TRIMENE BASE	—Accelerator for tire treads, footwear, and rubberized sheetings.
TRIMENE	—Accelerator made to replace HEXA.
CRYLENE	—Accelerator for hard rubber goods, and cheap black mechanicals. Made in two forms—the hard resinous, and the paste.
LITHEX	—Co-accelerator for use with litharge in all types of goods.
VGB	—Antioxidant for rubber, balata, gutta, guayule, and reclaim.
ZBX	—Zincbutylxanthate accelerator for use with various amines in making stocks and cements to vulcanize at room temperature or above.
MINERAL FLOUR	—Florida clay, the highest reinforcing clay available.
LABELS	—All-rubber two-color brands for tires, hose, belts, etc.
LATEX	—Normal consistency, and in concentrations up to 80% rubber content.
LOTOL	—Modified latex products for many uses. Penetrating, adhesive, and spreading.

THE NAUGATUCK CHEMICAL CO.

1790 Broadway New York City

TIRE FABRIC MILLS TO MOVE TO ALABAMA SOON

Contracts have been signed at Albany-Decatur, Alabama, by Obadiah Butler, president of the Connecticut Mills, Danielson, Conn. for the construction of a million dollar tire fabric plant.

Under the terms of the contract, the Textile Realty Company will build a $600,000 plant of concrete, brick and steel, which is to be leased by the Connecticut company for fifteen years, at the expiration of which time the company agrees to buy the building. Connecticut Mills Company agrees to install machinery valued at about $400,000.

Connecticut Mills is one of the few tire fabric manufacturers still operating in New England. Formerly the company made a large portion of Goodyear's and Fisk's requirements, making deliveries to the latter plant by truck. But with the acquisition of their own cotton mills by these companies and the number of tire manufacturers in New England reduced to six, its local market has been restricted. The company has mills at Danielson, Conn., Fall River, and Taunton, Mass.

The Philadelphia Rubber Works Company

Manufacturer of

RECLAIMED RUBBER

of

STANDARDIZED QUALITY

NEW YORK
52 Vanderbilt Ave.

AKRON, OHIO PHILADELPHIA, PA.
Land Title Bldg.

ESTIMATE PUTS CROP AT 17,454,000 BALES

Department of Agriculture Raises Oct. 1 Estimate 827,000 Bales due to Continued Improvement in Crop Prospects—Ginnings Under those of Last Year.

On the basis of the condition of the crop on Oct. 18, a cotton crop of 17,454,000 bales is forecast by the Crop Reporting Board of the Department of Agriculture, an increase of 827,000 bales over the forecast made Oct. 1, caused by the continued improvement in crop prospects. If the improvement continues, the total will be further enlarged with the next report of the Board, expected Nov. 8. The indicated yield of lint cotton was reported as 176.7 pounds per acre.

The Census Bureau reported 8,722,066 running bales ginned from the 1926 crop prior to Oct. 18. The figures compare with 9,518,946 for last year, and 7,615,981 for 1924.

It was said that the low price of cotton, together with the high cost of labor, has slowed up picking in many localities. In North Carolina there is a large amount of green cotton, much of which may mature, for the crop is very late in that State. The plants there and in many other sections, it was reported, are putting out new cotton. If all of this matures and weather conditions are favorable, an 18,000,000 bale crop is possible.

"Extensive defoliation of the cotton plants by leaf worms, coupled with warm weather and general absence of frost, have advanced the maturing of late bolls and permitted rapid picking," the Board reported. "Reports from substantially all of the cotton belt are that the production is greater than was expected.

"There is no question now that the largest crop in the history of the country has been grown. On the other hand, the low price and the scarcity of pickers, especially in the western part of the belt, will probably result in a considerable quantity of low grades not being picked.

"The present estimate of 17,454,000 bales refers to the indicated total ginnings for this season and is subject to some uncertainty with regard to how much of the crop produced will be harvested. Because of the low price, farmers are discouraged and may not be disposed to pick the last remnants of the crop, even if they can do so. In consequence of elements of uncertainty with regard to picking the entire yield indicated the crop may vary somewhat from the final figure."

CATALPO!

GOODYEAR PRODUCTION SETS NEW HIGH RECORD

A total of 3,721,209 tires, the greatest production for a three month's period in the history of The Goodyear Tire & Rubber Co., was recently announced by the company. The record tire output includes July, August, and September production in the Akron, California and Canadian factories of Goodyear.

Total Goodyear tire production for the second quarter, April, May, and June, was 3,455,022 tires, statistics show, and this mark was surpassed during the first quarter of this year when 3,493,164 tires were manufactured.

All three quarters exceed tire production figures of former years, the report shows.

I. Goldberg

I. Goldberg, president of I. Goldberg and Sons, wholesale rubber footwear merchants of 48 Lincoln Street, Boston, passed away from heart trouble at his home, 96 Elm Hill Avenue, Roxbury on October 27. The funeral was held on October 28 from his late home, with many representatives of the local rubber trade in attendance.

Mr. Goldberg has been a factor in local rubber footwear distribution for many years, and at the time of his death was distributor of Tyer Rubber Company and Lambertville Rubber Company products. The business will be carried on by his sons, who survive him.

Purchasing Agents Convene

The district convention of the New England Purchasing Agent's Association was held at the Boston City Club November 8 and 9, being featured by addresses and discussions concerning immediate problems such as hand-to-mouth buying and speculative buying.

Among the rubber companies who are affiliated with the association are the American Rubber Company, Cambridge Rubber Company, Converse Rubber Shoe Company, Davol Rubber Company, Hood Rubber Company, and Simplex Wire and Cable Company.

CLASSIFIED ADVERTISING

10 cents a word, minimum charge $2.00, payable in advance.
Address replies to Box Numbers, care THE RUBBER AGE, 225 Fourth Ave., New York.

HELP WANTED

CHEMIST

Wanted A-1 man to take complete charge of rubberizing plant with bread productivity. Must be thoroughly familiar with modern formulas. Big proposition for big man. Box 443, THE RUBBER AGE.

A company long established in the accelerator field desires to obtain a salesman to represent it, in the West, with headquarters in Chicago. Salary, commission and all expenses paid.
Box 442, THE RUBBER AGE

BUSINESS OPPORTUNITY

RUBBER FORMULAS

The latest formulas for balloon and high pressure tires and tubes; quick-cure cements; heels, soles, sponge rubber; belt frictions; dipped goods; reclaiming process. Send for our new list. RUBBER COMPOUND BUREAU, 727-A Second National Bldg., Akron, Ohio.

Bargains
IN USED RUBBER MACHNERY

[We also Handle New Rubber Machinery and Equipment.]

When you need additional rubber machinery, think of CLEVELAND EQUIPMENT *first*. We will not only have just the equipment you want—but at the right price too.

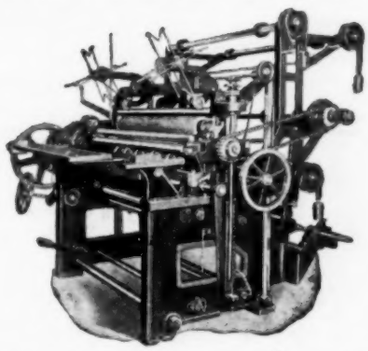
Calendars, 60″ to 66″	Engraving Machines	Engines, Boilers
Mills, 40″, 48″, 60″	Buffers	Turbines
Banbury Mixer	Hydraulic Pumps	Motors
Bias Cutters	Presses	Generators
Vulcanizers 48″ to 72″	Trimming Machines	Laboratory Equip.
Peerless Cutter	Tubers	Other Misc. Equipment

OUR GUARANTEE

If equipment is found on arrival to be other than as represented, you can return goods and we will refund your money. Inspections unnecessary.

Cleveland Equipment & Engineering Co.
Swetland Building, Cleveland, O.
Liquidators — Appraisers

CAMACHINE 6-C



—for quantity production of all kinds of stripping used by the rubber industry. If you make, use or sell stripping, write for information to—

CAMERON MACHINE CO.,
61 Poplar St., Brooklyn, N. Y

INTERNATIONAL PULP CO., *41 Park Row, New York, N. Y.*

SOLE PRODUCERS OF PURE **ASBESTINE** SPECIALLY PREPARED FOR USE IN RUBBER

Covered and Protected by Letters Patent Registered at U. S. Patent Office, Washington, D. C.

LIBERAL WORKING SAMPLE FURNISHED FREE

WITCO

BRIGHT RED OXIDE

Direct from our Works
An "All-American" Industry
For the Buyer who has talked
"Unalterably opposed to anything foreign"
and welcomes
Another satisfactory source of supply

Let us show you actual vulcanized results from Our own Rubber Laboratory that you can use our oxide to advantage in

SERVICE, UNIFORMITY and PRICE

Before contracting, communicate with

Wishnick-Tumpeer, Inc.

NEW YORK 253 Front St. | CLEVELAND Davenport & E. 14th St. | BOSTON 185 Devonshire St.
CHICAGO 365 E. Illinois St.

"THE HOUSE OF THE COMPLETE LINE"

Aluminum Filler
Antimony
Asbestol Filler
Barytes
Blacks (Misc.)
Blanc Fixe
Blues (Misc.)
Browns (Misc.)
Carbon Tetrachloride
Carbon Bisulphide
Carbon Black
Caustic Soda
Clays
Chromium Oxide
Diphenylguanidine
Fossil Flour
Green (Misc.)
Hydro Carbon
Infusorial Earth
Indian Red
Lamp Black
Lead Oleate
Lime
Litharge
Lead—Red
Lithopone
Magnesia
Mica
Montan Wax
Ochre
Palm Oil
Pine Tar
Pine Pitch
Pitch—Burgundy
Reds (Misc.)
Red Oxide
Rosin Oil
Rubberite Compound
Soap Bark
Soapstone
Stearic Acid
Sulphur
Talc
Thiocarbanilid
Titanium White
Ultramarine Blue
Vermilion
Venetian Red
White Lead
Whites (Misc.)
Whiting
Wood Flour
Yellows (Misc.)
Zinc Oxide

Royle Refinements —

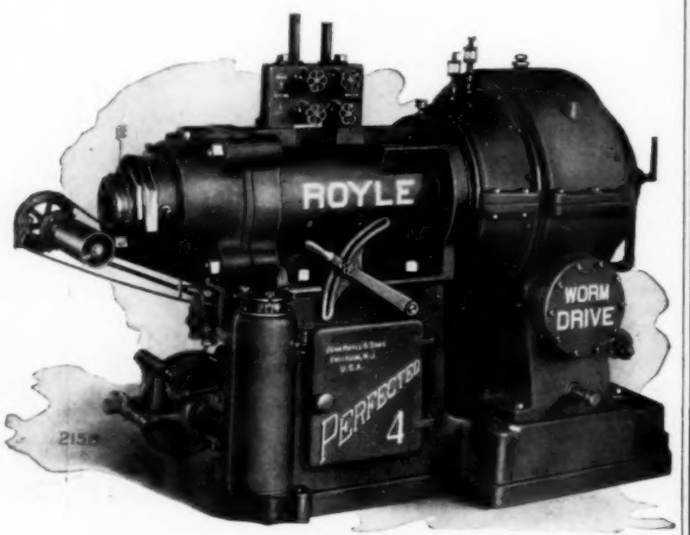
Add volume to the output and life to the machine

There's nothing crude, unhandy, or wasteful about a Royle tubing machine. Every part is standardized, interchangeable, and quickly replaceable when necessary.

High speeds—sensitive controls—powerful silent drive.

The Royle is a thoroughbred from foundry to paint.

At your service.



Bulletin 307 discusses this 6-inch soapstone tubing machine for inner tube work.
Other types and sizes for every tubing purpose.

JOHN ROYLE & SONS, Paterson, N. J.

TUBING AND INSULATING MACHINES — HOSE LOOMS

EDITORIAL COMMENT

Guayule

IN DEVOTING a number of pages of this issue to guayule rubber and the present status of the effort to put the guayule shrub on a cultivated basis this journal is not attempting the role of a prophet. It is however actuated by a desire to inform its readers fully on a subject that no longer warrants cursory treatment.

Although our readers will be interested in the matter from the strictly commercial viewpoint, a consideration of the botanical aspect is in order also since it indicates the breadth of the task which has been undertaken. If the efforts now underway to change the guayule shrub from a wild to a cultivated plant achieve the success which seems imminent, it will be the only instance in the present generation of a temperate zone plant being so changed. That fact alone commands respect for the undertaking. The outstanding similar transfer in the tropics is of course the Hevea tree.

In appraising the stage at which the experiments in guayule cultivation have arrived it is inevitable not to recall the early doubts that were entertained for the success of cultivated Hevea. Such misgivings seem ludicrous today in view of the enormous rubber plantation industry now existing and serving the world. A few years of Hevea cultivation were sufficient to relieve the world of its dependence upon the wild rubber tree. The victory in that instance was achieved under special conditions which in some ways are being repeated today.

From the standpoint of a raw material, guayule has served a useful purpose, and by virtue of the improvements which have been made and are being made in its quality, it appears to have an opportunity to serve more universally in the future. The increased supply of it which the world can use must of course be offered competitively and it is therefore of interest that special conditions now exist which may give the cultivated shrub a chance to establish itself among the important and accepted rubber producing plants.

The most important of these conditions is a relatively high price for rubber. Such prices are just what is needed to insure the completition of experiments and to strengthen young industries. In the case of rubber at the present time, the high price level is apparently to be artificially maintained when it tends to sag, and perhaps even to be pushed a little higher from time to time. The statistical position of rubber makes it reasonable to believe that the average price of rubber over the next ten years will be fairly high, even if artificial support were withdrawn.

In other words, before really stiff competition arrives the infant of today may have achieved a size permitting adequate defence. But if this cannot be done through having reached volume production by improved methods, there is always the possibility that it may receive the protection that has nourished many another American industry. There would likely be many who would hold that the cost of such protection was slight when compared with letting someone alse grow this country's rubber at a dictated price.

Associations

IN A recent address an official of the Chamber of Commerce of the United States declared that trade associations have performed a distinct service to American industry by helping to wipe out much of the bad feeling which formerly existed among competitors and by encouraging the adoption of a code of business ethics. Before the advent of trade associations, the official pointed out, individualism was strong in industry and competitors rarely came together. Those were the days when the factory gates and doors were barred against everybody, and competitors in particular. The transformation, which is everywhere obvious, has been brought about by closer contact and a better understanding among competitors through association in their trade organizations.

The rubber industry is in a position to appreciate the facts to which the Chamber of Commerce official calls attention since the changed attitude between competitive rubber companies is unusually striking. Today there is a wholesome fraternization among rubber company executives, chemists, engineers and others which would have seemed fantastic fifteen years ago when the importance of trade secrets was overemphasized. Companies have learned that the rapid progress of the entire industry which comes from the joint solution of problems pays attractive dividends to everyone concerned. The strides the rubber industry has made are certainly due in part to the growing spirit of cooperation.

What part the Rubber Association has had in this profound change cannot be definitely stated. Its contribution is another one of the intangibles which cannot be measured and yet is most important.

Restriction

THE CHIEF American comment on the new regulations under which British rubber restriction will be administered during the next year is that the basic fault of the entire scheme has not been removed. The reference is not to the pivotal price, no matter how unjustifiably high that may have been pushed, but to the fact that the system still lacks sufficient flexibility. There will no doubt be those who will argue that flexibility has been increased, basing their belief on the fact that increases or decreases as great as forty per cent are now provided for. Those very provisions seem to indicate a recognition of the possibility of wide fluctuations in price, but any controversy on the subject would be idle and certainly futile.

It might have been expected that the British would try to prevent price fluctuations since the growers maintain that the last time the price of rubber raced upward it was the speculators who really benefitted. In our opinion the need for a considerable stock of rubber under centralized consumer control is greater than ever, but the likelihood and feasibility of getting it is no less remote.

STAUFFER QUALITY CHEMICALS

"ANCHOR TO STAUFFER"

SULPHUR

For

the RUBBER INDUSTRY

Tire Brand

Superfine Commercial Rubber Sulphur 99½ Per Cent Pure

Tube Brand

Velvet Rubber Sulphur 100 Per Cent Pure

These grades are carefully controlled during the process of manufacture to assure uniform quality and the particular fineness required by all rubber manufacturers.

"Made at the Mine"

Stauffer Chemical Co.

OF TEXAS

711 SCANLAN BUILDING HOUSTON, TEXAS

Sales Offices:

111 W. Washington St. Chicago — 1535 W. 25th St. Cleveland — 452 Lexington Ave. New York

WAREHOUSE STOCKS AT AKRON AND CHICAGO.

Gasoline Tax Figures Used to Reveal Seasonal Tire Consumption

Gasoline taxes, which were first imposed in four states in 1919 and are now collected in 44 states, offer a splendid opportunity for showing the comparative use of cars, and accordingly the comparative tire wear and consumption, in various sections of the country. It is believed that there is no better barometer to tire consumption in various states than these gasoline consumption figures considered along with automobile registration statistics.

The Rubber Association, at the instigation of its Tire Executive Committee, has been collecting the gasoline tax and automobile registration figures for each quarter-year since 1924 and has regularly compiled a table showing the average gasoline consumption per car for each state in the four seasons. Sales managers of tire manufacturing companies are said to find the compilation most valuable in gauging business and setting sales quotas. An examination of the latest table shown below will reveal the time of the year when different states have been employing their automobiles to the greatest extent. Four states, Illinois, Massachusetts, New Jersey and New York impose no gasoline tax and comparable figures for them are accordingly not available.

AVERAGE GASOLINE CONSUMPTION PER MOTOR VEHICLE, BY STATES

(In gallons, by quarters of years indicated)

State	1924 First	1924 Second	1924 Third	1924 Fourth	1925 First	1925 Second	1925 Third	1925 Fourth	1926 First	1926 Second
Alabama	122	145	160	159	121	140	149	149	137	152
Arizona	128	124	126	119	115	131	123	115	104	a
Arkansas	97	134	149	129	133	133	176	121	117	148
California	177	167	167	142	200	a	a	a	a	a
Colorado	133	120	169	127	133	142	149	98	84	132
Connecticut	146	173	189	143	133	176	a	a	a	a
Delaware	101	146	167	119	111	150	145	112	87	135
District of Columbia	a	a	122	111	122	144	145	112	93	127
Florida	220	188	177	182	268	207	208	249	252	172
Georgia	189	182	181	167	218	196	175	170	158	168
Idaho	94	162	155	92	81	123	156	103	73	140
Illinois	a	a	a	a	a	a	a	a	a	a
Indiana	84	137	132	101	112	a	130	102	78	112
Iowa	a	a	a	a	a	a	a	a	68	105
Kansas	119	130	167	119	142	146	152	108	102	142
Kentucky	119	100	137	111	117	121	138	98	79	96
Louisiana	149	167	182	161	174	189	185	155	138	156
Maine	128	189	187	105	96	a	a	97	28	119
Maryland	79	138	156	126	a	122	a	a	84	143
Massachusetts	a	a	a	a	a	a	a	a	a	a
Michigan	a	a	a	a	a	a	186	120	95	140
Minnesota	94	126	160	110	105	139	150	107	75	128
Mississippi	134	132	169	147	141	162	165	129	125	a
Missouri	122	89	150	145	110	114	155	118	108	107
Montana	a	a	a	a	a	a	a	a	a	a
Nebraska	175	116	121	124	a	a	a	104	90	134
Nevada	113	157	159	108	133	140	162	108	85	140
New Hampshire	77	165	200	104	52	143	192	106	45	113
New Jersey	a	a	a	a	a	a	a	a	a	a
New Mexico	121	132	145	124	147	137	145	111	95	132
New York	a	a	a	a	a	a	a	a	a	a
North Carolina	115	134	147	150	a	210	a	a	121	160
North Dakota	168	140	184	116	197	160	204	106	93	150
Ohio	a	a	a	a	a	a	a	105	87	159
Oklahoma	159	122	153	133	107	120	123	110	108	a
Oregon	114	151	175	106	128	150	182	116	105	151
Pennsylvania	90	114	167	106	a	a	a	a	a	a
Rhode Island	a	a	a	a	a	a	164	122	86	128
South Carolina	137	140	143	133	261	206	107	137	114	147
South Dakota	138	134	174	124	123	149	175	112	85	134
Tennessee	166	108	141	142	a	a	a	a	a	a
Texas	175	150	161	143	185	141	148	120	106	140
Utah	154	128	128	89	149	117	a	93	75	124
Vermont	91	154	179	103	a	a	a	a	a	a
Virginia	109	133	148	125	107	141	136	110	97	135
Washington	128	159	169	115	149	157	168	121	109	150
West Virginia	105	125	141	92	79	157	a	a	53	a
Wisconsin	a	a	a	a	a	a	a	106	63	124
Wyoming	a	a	a	a	a	a	172	88	63	129
*UNITED STATES	126	138	148	122	140	158	154	118	118	143

a—Not available.

*—These figures represent the total U. S. consumption (Department of Commerce) and are not the sum of the individual state totals shown above.

[Editor's Note: A valuable check to the rate at which tires are being worn out is provided by the monthly gasoline consumption statistics such as are regularly published in this journal. See page 151 of this issue.]

GUAYULE
Supplement

November 10, 1926 :: THE RUBBER AGE :: Vol. 20 No. 3

The First Complete Presentation of Authoritative Articles Dealing with the Present Status of Wild and Cultivated Guayule

1. The One Region Where Wild Guayule is Found 126

The natural habitat of the wild guayule shrub is limited to one region about 600 miles in length and 250 miles in width.

2. Cultivation to Enlarge Guayule Supply (*illustrated*) 127

Improved quality of guayule rubber shows possibility of using much more than the wild shrub can furnish since it reproduces so slowly. Experiments in cultivation have accordingly been undertaken.

3. Botany and Cultural Problems of Guayule (*illustrated*) 129

By Wm. B. McCallum

The problems of getting the guayule shrub to produce seed abundantly and of getting that seed to germinate freely have been solved. A system of cultivation by machinery has been devised and progress in growing approved strains of the plant should be rapid.

4. The Chemistry of Guayule 133

By David Spence

The quality of guayule rubber is constantly being improved. Recent improvements have come largely from careful control of deterioration while the shrub is in storage. Work under way points to a still better and more uniform product.

5. The Production of Guayule Rubber (*illustrated*) 136

By George H. Carnahan

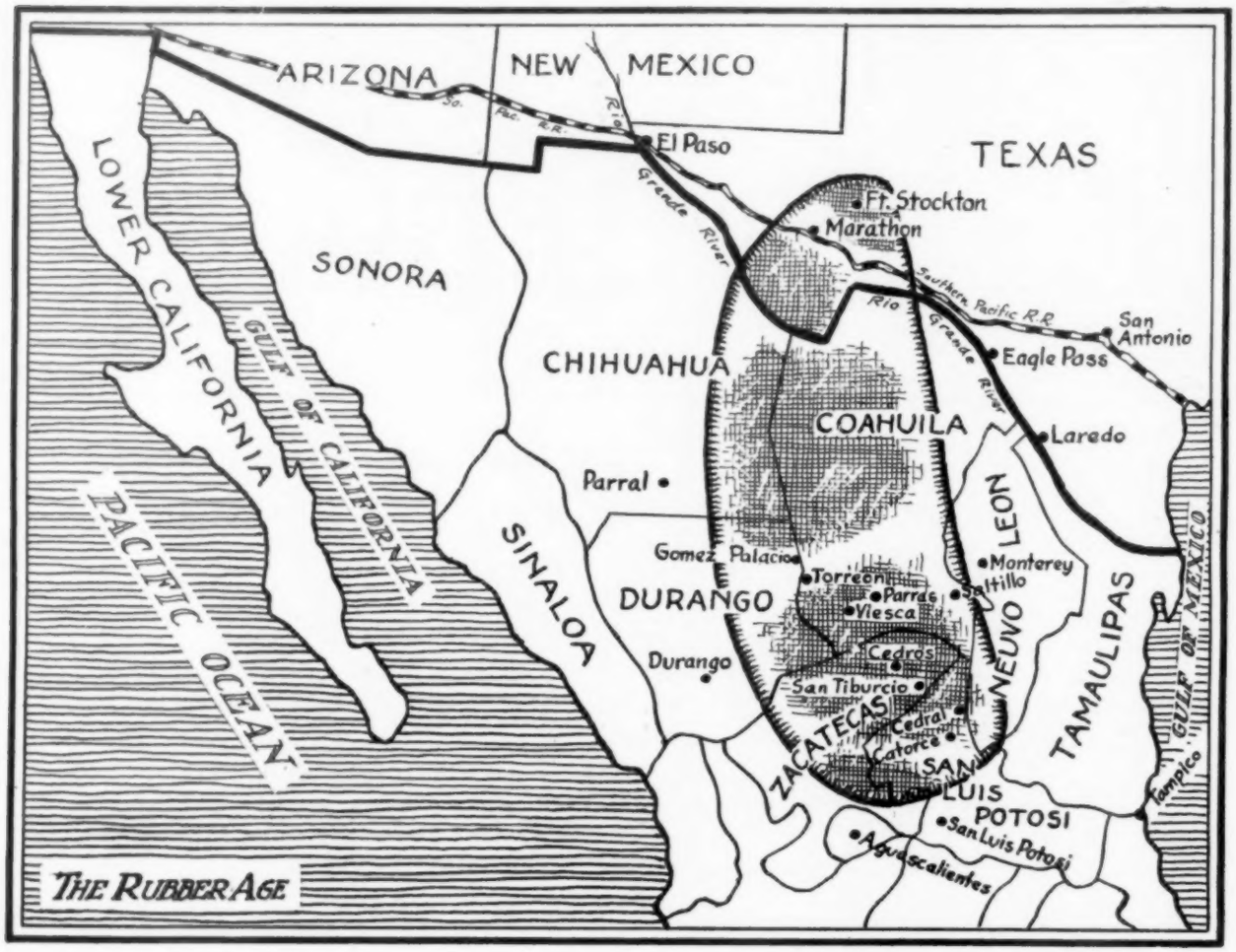
As eventually to be developed in the United States, guayule growing will be in the hands of the individual farmer or land owner who will contract his crop and be guided and financed by the factory organization much in the same fashion as the beet sugar business.

6. Guayule Rubber from Texas (*illustrated*) 139

By John C. Treadwell

The extension of the wild guayule region into Texas has been taken advantage of through the operation of an extraction plant at Marathon in that state. At the present time this plant furnishes the only crude rubber produced in the United States.

The One Region Where Wild Guayule Is Found



THE WILD guayule shrub occurs in only one region in the entire world. That region is generally oval in shape and is located as prominently marked on the above map. Its greatest length is approximately 600 miles, its greatest width perhaps 250 miles. There is no wild guayule elsewhere—or at least diligent search throughout the world has failed to reveal it.

Although wild guayule occurs in most parts of the oval region marked on the above map, it does not grow everywhere in the same profusion. In very many places within that region it is entirely lacking; in others it is sparse. The shading indicates in a general way the areas in which the shrub is most common or plentiful. It will be seen that two of these areas are across the Rio Grande in the United States.

The cities and towns marked within the oval are the sites of factories for the extraction of guayule rubber from the shrub. The only one north of the Rio Grande, and therefore the only one in the United States, is at Marathon, Texas. The factory there is the property of the Border Rubber Company, a subsidiary of the Chas. T. Wilson Company of New York City.

Three guayule extraction plants in Mexico are the property of subsidiary companies of the Intercontinental Rubber Company of New York. These are located at Torreon, Cedros and Catoree. The Mexican Crude Rubber Company of Detroit has plants at Cedral and Viesca. Both of these are now under lease to Intercontinental but the one at Viesca is not equipped for production and there are no present plans for putting it into operation.

The Cia. Explotadora Coahuilense, controlled by the Madero family of Mexico, has guayule extraction plants at Parras, San Tiburcio and Gomez Palacio, the latter being only a short distance from Torreon. The guayule rubber produced by the Cia. Explotadora Coahuilense is marketed in the United States through the Baird Rubber and Trading Company of New York City. At Torreon there is also a plant owned by a Mr. Mueller.

The extraction plant at Saltillo was established by the Cia. Explotadora de Caucho Mexicana. The company experimented extensively with extraction by means of acetone, precipitating the rubber with alcohol. After a reported expenditure of $1,000,000 the process was given up as a failure. The plant then went to operating with the well-known mechanical process of maceration in pebble mills. It is now dismantled and inoperative.

There are possibly two or three extraction plants not mentioned in the above paragraphs since there were as many as thirteen plants known to exist at one time, but any not mentioned have either been dismantled or certainly are unimportant at the present time. As a matter of fact, many of the plants mentioned are operating only intermittently. The usual season is from 7 to 8 months.

Cultivation to Enlarge Guayule Rubber Supply

Slowness of Wild Guayule Shrub in Reproducing After Harvesting Together With a Greatly Enlarged Potential Demand for Improved Guayule Rubber Has Promoted Experiments in Cultivation, the Success of Which now Seems Assured—Optimum Conditions Found Near Salinas, California, and the Continental Rubber Co. is Expanding Guayule Plantations There.

A Mature Guayule Plant

THE GUAYULE rubber produced last year was equal to about one per cent of the total rubber consumption of the United States, notwithstanding the fact that the 1925 production was less than half that of several pre-war years. In the 21 years ending with 1925, according to the figures of the Continental Rubber Company as shown in the table at the bottom of this page, the output of guayule rubber on a dry basis has amounted to 126,555,620 pounds or 56,500 long tons. This period included several years when the production of the rubber was almost completely curtailed through revolutions in Mexico or an unfavorable rubber market.

The rate at which guayule rubber can be produced is naturally limited by the quantity of shrub available. When an area of wild guayule is harvested, about seven years are required for the shrub to reproduce itself. Such a rate of reproduction would permit a regular annual output of guayule rubber no greater than 4,000 or 5,000 tons. Since an increase in the use of improved guayule rubber appeared certain, the idea of domesticating and cultivating the shrub was natural.

The first experiments toward the cultivation of guayule shrub were undertaken by the Continental Rubber Company in 1907 on its Cedros ranch in Mexico. It was apparent at once that there were many obstacles in the way of successfully domesticating the plant. Some headway had been made in overcoming these when revolutionary disorders forced the plant experts to return to the United States in 1910.

Experiments were resumed in this country with seed which the experts had brought back with them from Mexico. In order to determine the best soil and climatic conditions for guayule rubber cultivation trial plantings have been made in Arizona and near San Diego and Salinas, California. The most satisfactory conditions have been found near the latter city and 200 acres of guayule have been planted there. At the present moment some 450 additional acres are being put in. The Continental company expects to have thousands of acres of guayule under cultivation within the next few years.

The solution of the cultural problems, the preparation of improved grades of guayule rubber and the economic side of guayule rubber cultivation are expertly discussed on the following pages. The production of guayule from wild shrub in Texas is also described in an equally authoritative article.

Photo by Dr. F. L. Lloyd

Production of GUAYULE RUBBER

(Reduced to a dry basis)

Year	*Dry Pounds*
1905—	750,000
1906—	3,637,500
1907—	8,610,000
1908—	10,863,750
1909—	16,875,000
1910—	21,375,000
1911—	16,064,005
1912—	13,870,255
1913—	4,409,874
1914—	594,334
1915—	3,104,047
1916—	633,154
1917—	2,299,174
1918—	4,029,412
1919—	2,427,022
1920—	2,200,342
1921—	64,802
1922—	615,770
1923—	2,743,579
1924—	3,076,200
1925—	8,313,200
Total (21 yrs.)	126,555,620

Illustration shows Natural Growth of Guayule on the Cedros Ranch.

INTERCONTINENTAL RUBBER COMPANY and SUBSIDIARIES

CONTINENTAL-MEXICAN RUBBER COMPANY

Four factories producing Guayule rubber in the Republic of Mexico.

CONTINENTAL PLANTATION COMPANY

Hevea rubber estates in Asahan, Sumatra, Dutch East Indies.

AMERICAN RUBBER PRODUCERS, INC.

Cultivated Guayule rubber production in the United States.

"DURO" BRAND

GUAYULE RUBBER

This well known Brand as now produced has found a useful place in the art of rubber manufacture. Washed and dry ready for compounding Duro Brand Rubber is invaluable in conjunction with Plantation Rubbers and Reclaims as an aid in compounding, imparting properties obtained in no other way.

SALES AND TECHNICAL SERVICE

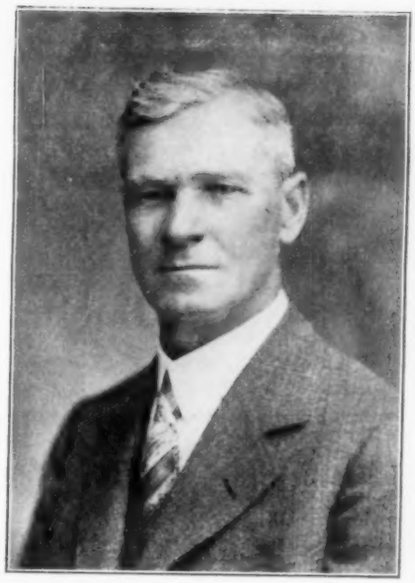
Continental Rubber Company of N. Y.

120 Broadway New York

Botany and Cultural Problems of Guayule

A First Step in Cultivation of Guayule Has Been To Become Better Acquainted With It Botanically

By WILLIAM B. McCALLUM
Botanist, Continental Rubber Company



Wm. B. McCallum, Botanist of the Continental Rubber Company.

THE NUMBER of plants known to produce rubber is upwards of 100, and the list is constantly increasing. While these are fairly scattered throughout the plant kingdom there is a tendency toward segregation in certain families; the euphorbias and the milkweeds affording a common example. In most cases the amount of rubber in the plant at any one time is very slight. Even in hevea, which practically supplies the world with rubber, the latter never constitutes, at any one period, more than a fraction of one per cent of the total weight of the plant.

Usually the rubber is in the form of a latex emulsion. This is developed in a system of minute tube-like glands that ramify through certain areas, more commonly the peripheral portions of the plant. This fluid, as in the case of most glandular secretions, is under a certain hydrostatic pressure so that when the ducts are severed, as in tapping, a certain amount of the latex with its contents, is forced out.

But in some cases there is no definite glandular system and the rubber occurs in the general parenchymous cells of the plant, accumulating as solid rubber in the individual cells. This is the condition in guayule.

This shrub belongs to the *compositae* (sunflower) family, and to the *genus Parthenium*. The species is *Parthenium Argentatum*, from the silvery gray appearance of the leaves. It is a native of the plateau region of central and northern Mexico, and ranges in a broad zone from the State of Zacatecas to a little north of the International border, extending somewhat into the Big Bend region of Texas. It has never been found growing naturally outside of this area. In the main, it confines itself to altitudes between 4,000 and 7,000 feet, and limits itself almost exclusively to the limestone hills and slopes. Rainfall, in guayule's natural habitat, ranges from 7 to 14 inches annually.

I was first employed in 1911 by subsidiaries of the Intercontinental Rubber Company to carry on in Mexico certain portions of the botanical study and propagation work that had been well started by my good friend Professor Francis E. Lloyd. Shortly thereafter the revolutionary disturbances became so acute that our work in Mexico, together with factory operation, had to be suspended and the experimental plots on Cedros ranch and elsewhere were abandoned.

Meanwhile we had all been greatly impressed with the potential importance of what we were trying to do and the officers of the company, with eyes open to the difficulties to be overcome, instructed me to salvage a large and representative seed supply and start over again in California, and this was done in 1912, 36 years after Sir Henry Wickham had taken the first hevea seeds from Brazil and at a time when the world was beginning to realize the great importance of this historic event. Already the bulk of the world's rubber supply was shifting from wild to cultivated sources with hevea as the medium and even then we thought we saw certain latent but inherent advantages of guayule over hevea.

In the few minutes allotted to this subject, a full description of the plant is impossible, and only the outstanding characteristics may be mentioned. Being an evolutionary product of the desert, it has the characteristics that adapt it to that arid environment. In form it is an erect woody shrub, usually not exceeding two feet in height, and with a native dry weight of rarely more than two or three pounds. It is a hardy perennial, and, under undisturbed natural conditions, lives probably 40 or 50 years. It has small composite flowers which usually produce but little seed, but are potentially capable of producing abundant seed under suitable conditions. Like most plants of this type, its powers of vegetative reproduction are very weak, which added greatly to the difficulties of working out practical cultural methods. In its natural habitat the growth is very slow. An average five-year plant from the seed will weigh less than a pound, although in occasional favorable conditions the weight is somewhat more.

Natural reproduction is almost entirely by seed, but a majority of plants pulled during or just before the rainy season will resprout from the rootlets left in the ground. The seeds are very minute, 1,000 weighing less than a gram. Ordinarily but little seed is produced, and in very dry years, none at all; but in the occasional favorable years a large amount may be formed. The seed is quite fertile and retains its vitality for many years, but is incapable of germination at once, and can do so only after a considerable lapse of time.

One of the most important characteristics of the plant is its highly developed capacity to withstand drought, remaining active and making a certain amount of growth with a very low water content.

Guayule shrub will thrive and produce varying amounts of rubber under a broad selection of soil and climatic conditions, just as is the case with potatoes, sugar beets, etc. However, as in the cases cited, there will always be found certain localities where optimum conditions exist and the industry will eventually center around factories erected at such places.

A certain amount of frost and the period of dormancy thereby induced appears to be necessary to the health of the plant and for promoting the desired degree of stimulation to its rubber forming function. Our own experience covers temperatures as low as 5° F. We do not know that this is the limit, but think it is near it.

Attention has been called by Dr. Spence to the enormous concentration of pure caoutchouc in guayule shrub as compared to its total dry weight. We have instances where a mature cultivated plant of very special variety weighed on a dry basis three pounds. Of this total, 10 per cent was represented by leaves and flower stems, and 45 per cent by the woody fiber and pith containing practically no rubber, although young specimens carry somewhat more rubber in this portion of the plant. Nevertheless, analysis of the whole plant showed it to contain 20 per cent pure caoutchouc which means that the cortex must have represented 45 per cent of

Delivered at the Crude Rubber Symposium of the Rubber Division, American Chemical Society, in Philadelphia, Sept. 9 and 10, and printed in the Society's organ, *Industrial and Engineering Chemistry*.

the plant's weight and that it was nearly 50 per cent pure dry rubber.

We know that certain very old castilloa trees in the Amazon valley have been felled and made to yield as much as 100 pounds of dry rubber. However, the dry weight of the whole tree with roots was perhaps 20,000 pounds, thus showing a rubber content of one-half of one per cent.

The principal point of difference seems to be that the latex producing plants have no capacity (or necessity) for storing rubber, any more than a cow has capacity to store butter if she is not milked. On the other hand, guayule under conditions found in its natural habitat and simulated under cultivation as now practiced has a very definite need and use for stored rubber in the form of an impervious sheath to minimize the loss of water by evaporation. The fact that the rubber in guayule, once formed, is static in thickly overlapping individual cells and is never fluid at any stage, is merely Nature's way of making storage possible, just as similar hydrocarbons or carbo-hydrates are stored in other plants against the day of need.

Because of the special environment necessary to its best economic development, guayule shrub will never produce the tonnage of plant per acre per year that is a natural result with hevea in the tropics, but in the manufacture of pure caoutchouc guayule, given the conditions of certain large areas in California, may be depended upon to at least equal the present performance of plantation hevea. As hevea is gradually improved through the use of better budded stock and otherwise, we have reason to believe that still higher yielding varieties of guayule will be available in commercial numbers.

How Resin is Formed in Shrub

In addition to rubber a certain amount of resin is formed in the plant. In the mechanical process of extraction varying amounts of this become incorporated in the rubber, which has led to the common idea that resin is a natural constituent of the rubber. This, of course, is quite erroneous, for it is as foreign to the rubber as is the cellulose. Different from the rubber, the resin is formed in a definite system of resin secreting glands. These are in the form of minute tubes or canals running longitudinally. Each canal is surrounded by a special layer of cells capable of producing resin, which it secretes into the tubes, where it remains under slight pressure, so that when the stem is cut, a certain amount is forced out. No other cells of the plant are able to make resin. The amount is relatively constant in the plant and is entirely limited to these special glands, which have no connection with the rubber forming cells, so that in the plant, the two cannot possibly come in contact with each other. Apparently Nature supplied resin to the plant as a seal or dressing for wounds just as rubber latex seems to have been given to hevea and other similar plants.

The broad problem that presented itself at the beginning of our work was the transference of such a plant from its desert environment to conditions of intensive culture and forced growth, without impairing the all important function of rubber secretion, which is in itself a response only to dry conditions and regulated growth.

In the early days, two prevailing convictions in the guayule industry long discouraged efforts toward its cultivation. One was that the plants did not reproduce from seed, and the other was that when grown under cultural conditions it would not produce rubber. There was a certain amount of justification for both of these beliefs. The so-called seed obtained from the range plants was largely chaff, and contained little actual seed, and the few of the latter present, usually were unable to sprout; and, on the other hand, there were numerous instances of range plants transferred to irrigated gardens and other favorable places where the growth was always accelerated, but the rubber dropped almost out of sight.

Work has Occupied Fourteen Years

The two outstanding questions at the beginning then were, could the plant be reproduced in a practical way on a large scale? And, could it be made to produce sufficient rubber under conditions of accelerated growth? This work has occupied some fourteen years and has ramified into many channels, so that only a few of the high spots can be touched upon here.

The first efforts at cultivation were by means of cuttings. But an elaborate series of experiments demonstrated the complete futility of this line of attack. Many thousands of cuttings from plants in all sorts of conditions were made; but at best, not one in a hundred could be made to root, and the roots were strikingly lacking in vigor and vitality. The only other possibility was the seed, and this led to an exhaustive study of the whole method of sexual reproduction and vitality. It was found that under suitable conditions of growth the plant could be made to produce abundant seed, but, as if to register its first vigorous kick against civilized ways, these seeds positively refused to germinate. This was not due to the more common cause of belated germination, that is, impervious seed coats, for the latter are perfectly pervious to both water and air. As further progress could not be made until we could at least germinate the seed freely, a detailed investigation of this rather complicated phenomenon was necessary.

These studies cannot be described here, except to relate that the trouble lay in extreme inaction of certain of the ferments that incite germination, and means were finally found to stimulate them into action, so that we were able to germinate the seed promptly and freely.

Section of the Guayule Farm in California Where Tests on Guayule Seed Are Made and Checked. Each Stake Indicates a Different Kind. This Illustration Indicates the Large Scale on Which Experiments Were Conducted.

Having gotten the seeds to sprout at will, the next step was the working out of a practical method to produce seedlings on a large scale. We soon found that the characteristics developed to meet the natural environment of the plant, were not the kind that would readily lend themselves to intensive domestication. In the natural habitat, that is, a loose limestone soil, well drained, and well aired, void of humus, and dry practically all the time on the surface, the sanitary conditions are perfect, and resistence to various soil diseases plays no part at all in the struggle to survive. So that while the seedlings on the range are especially devised to resist the attacks of drought and similar adversities, under the more artificial conditions of rich soil and plenty of moisture, they fell easy prey to damping off and similar diseases.

Growth of Seedlings is Slow

The natural limestone soil, also, being floculent and usually pretty dry, is extremely well aired, and the young seedlings have adapted themselves rather narrowly to this condition, and the least compactness of soil or excess of moisture causes unhealthy growth and great loss. In addition, the natural growth of the seedling is very slow. At a year old they are rarely more than an inch or two in neight, so that to produce a plant large enough to set out in the field in one season, in crowded nursery beds, required very artificial conditions, including rich soil, abundant moisture and forced growth. The loss at first was very great from damping off and other causes, amounting frequently to seventy-five per cent of all our plants. This was finally overcome after extensive experimental work in determining, and learning how to provide just that physical condition of soil that is necessary to healthy root growth, and how to control the general growth so as to get the adequate size and strength without undue forcing at any time.

The extent to which this has been accomplished on a large and practical scale is illustrated by the fact that in our California nursery this year some five million plants were produced without, so far as can be observed, a single loss.

Reference was made to the fact that the plant has poor powers to vegetative propagation. Seedlings and small plants transplanted from the range always gave poor stands. They are very tenacious of life and with enough moisture in the ground, would sometimes remain alive a year without rooting, and then slowly die. Our first planting with plants of our own production was a most discouraging failure, scarcely more than one percent finally growing. Subsequent attempts met with somewhat better success, but not enough to justify practical operations. The cause of the trouble lay in the inability of the young plants to root again, once they were taken out of the ground, and then replanted.

This difficulty was the most serious we had yet encountered and for two or three years threatened to block all further progress. With the hope of overcoming it, an exhaustive study was undertaken of the whole matter of vegetative reproduction in the plant. The many interesting facts determined in connection with the development of the different vegetative parts of the plant body must be passed over. Sufficient to say that in the study of the various physiological correlations that determine the conditions of dormancy or activity of various parts of the plant, and in the development and correlations of the root system, certain natural tendencies of growth were found that could be taken advantage of in producing a plant that grew easily when transplanted.

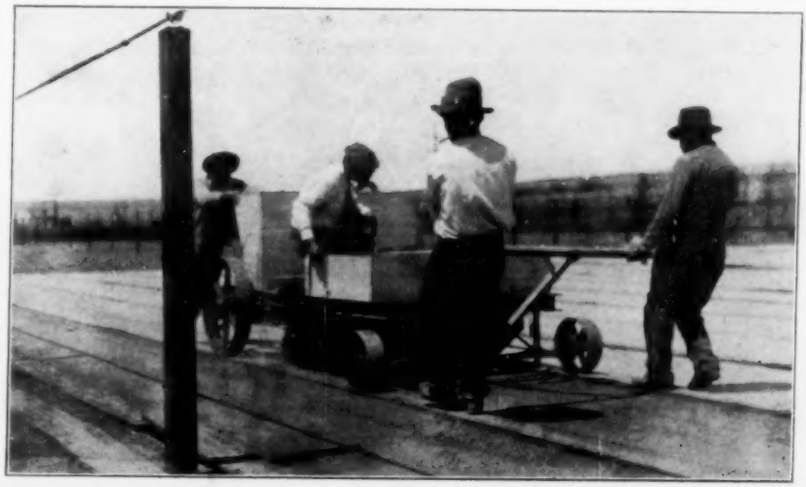
In its natural course of development, the first root formed by the seedling is a long, deep, very pronounced tap root, with almost no lateral branches. This gets the root quickly down to moisture and establishes the young plant well in the ground. But this type is not suited to the older and larger plants, for in a region of infrequent and light rains, the moisture is shallow, and in the older plants the single deep tap root is replaced by a widely extended, shallow, much branched, lateral root system. During this transition over from the tap to the lateral system, the tendency to a lateral root development is very strong. After a good deal of experiment and experience it was found possible to develop a suitable nursery bed plant and get it, during one season, into that physiological condition of strong root development at a time coincident with the planting season. Such plants root with ease, and we were able to get almost a perfect stand. With the type of nursery plants ordinarily used, and in normal field operations on a large scale, this year, we got a 94.6 percent stand. This would be a remarkable stand for any horticultural plant under such extensive field conditions.

The Development of a Culture System

With the two main problems that have been mentioned, that is, the production of plants on a large scale, and their successful transplanting to the field, under control; the third and final major problem was the development of a system of culture that would maintain a high percentage of rubber under conditions of relatively rapid growth. Our early experiments had confirmed the common experience that under conditions at all favorable to growth, the plants were reluctant to produce rubber. This, of course, was to be expected, because it is the arid condition of the plant with inhibited growth, that is, if not the direct stimulus at least an essential condition to the formation of rubber, and even a moderate growth and the laying down of rubber are physiologically antagonistic.

Our first serious efforts to overcome this antagonism of functions met with little success. Although we brought plenty of shrub through to maturity it was of little or no commercial value after we got it. Four year old shrub of ordinary varieties, which on the range produced fifteen per cent dry rubber on dry shrub, would drop to four per cent when excessively irrigated. A high tonnage was easy to get. Some plants which on the range at five years of age would weigh about a pound, under cultivation and irrigation, weighed, at that age, as much as twenty pounds; but the percentage of rubber dropped almost to the vanishing point.

With the hope of overcoming this difficulty, investigations along two general lines were conducted. These, while fraught



Special Seeding Machine Distributing Guayule Seed in the Nursery Beds. The Beds are Four Feet Wide and the Machine Runs on Boards Placed Between Them. The Pictures on Succeeding Pages Trace the Growth of the Plants.

with many discouragements and consuming ten years' time, finally yielded the desired results.

The first of these lines involved an extensive physiological investigation of the whole phenomenon of rubber formation in the plant, and the factors that accelerate or retard it. It was found that while practically no rubber is formed during a condition of active, even though quite slow growth, if the growth is not forced too much or too long, this does not prejudice the formation of rubber later, if the proper conditions are supplied. But if the growth has been forced too much it is practically impossible to get any considerable amount of rubber formed for a long time afterwards. Plants grown quite rapidly under irrigation for two or three years, may be left inactive for years without recuperating very much in rubber. For fundamental reasons of growth, thick bark is only laid down during periods of slow growth, and after the general increase in size for the season has been accomplished, so that a continuous growth, running any considerable length of time, prohibits the formation of that area in which the rubber could afterwards be produced.

Rythmn Between Growth and Secretion

From studies on the formation of rubber under various natural and experimental conditions, it was found that there is a certain seasonal and periodic rythmn between the functions of growth and the secretion of rubber, and that a moderate growth, if not too prolonged and at the right time, can be followed quickly by a vigorous formation of rubber. So that with alternating periods of moderate growth, and rubber formation, each coming at the right time, it was possible to get the cumulative effects of both, and at the end of four years have a field plant of sufficient tonnage to satisfy our requirements, with a percentage of rubber approximating that of the wild shrub. In strictly arid regions the necessary growth is obtained by irrigation at the proper periods, and withdrawal of irrigation which throws the plant into the required condition of dormancy. In the region of exclusive winter rains the same result may be obtained even more economically without irrigation.

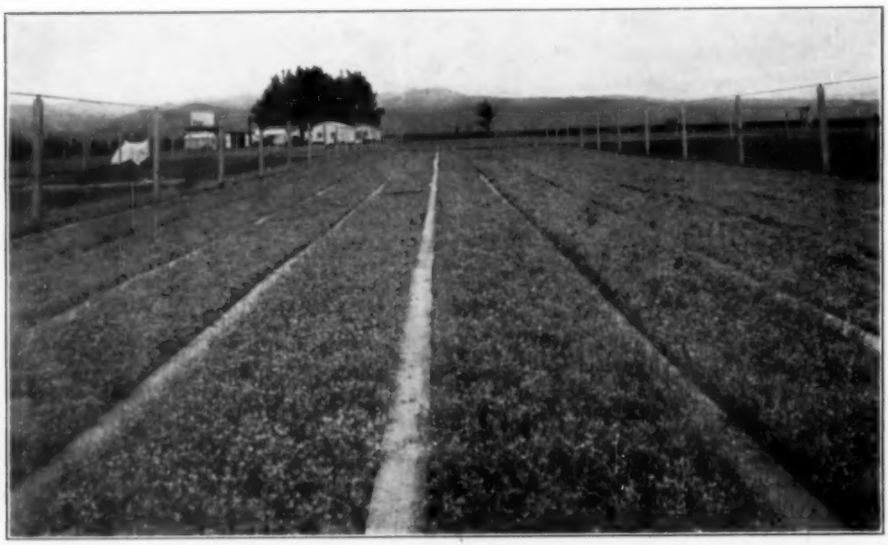
The second of the two lines of attack on this problem of rubber production in the cultivated shrub will be briefly mentioned. While not the most difficult, or even necessarily the most essential, it has constituted what we may call the more spectacular side of our work. Early observations on the wild shrub revealed variations that suggested different strains, or varieties. Under cultivation these differences were much more pronounced and appeared to afford opportunity for improvement by selection and breeding. The small composite flowers are self fertilized by means of small insects and crossing of our stabilized varieties is very rare.

The range of differences among these strains is very great. In size at five years old they may range from one to twenty pounds, and they show almost equal variations in the percentage of rubber, and in other characters. What we wanted, of course, was one that combined the main characters of large size, high rubber content, ease of propagation, and adaptability to cultivation; all in one. But naturally enough, the plants didn't see it that way, and exhibited all sorts of combinations except these. The work of isolation and selection was necessarily slow and uncertain at first, because, to find out the most important character, that is, the rubber content, required four years. The first definite results were quite disappointing, for most of the large and most promising looking types proved to be too low in rubber. But enough interesting and valuable information was brought out to convince us of the great potential possibilities along this line, and a more comprehensive study of the genetic composition of the shrub than had hitherto been made, was undertaken.

Many thousands of analyses for rubber were made together with a very minute study of the correlations between the various external characters and the potential rubber capacity. As a result we became pretty reliable in recognizing the rubber possibilities of a plant from its external characters. This of course speeded up the work enormously. In 1913 and 1914 we set out in Southern California somewhat over a million shrubs from mixed seed brought from Mexico and later in Arizona a much larger number. In succeeding years these were worked over in great detail, practically every shrub being examined and thousands of selections and analyses for rubber made. Hundreds of strains were isolated and grown, and the more desirable ones reduced to constant types and stabilized. Mr. Carnahan will have something to tell you regarding the success we eventually achieved but it may be remarked in passing, that these results are the outcome of 14 years elaborate and costly work. The total number of plants finally obtained, that served as the starting point for commercially successful strains, does not exceed ten, and these have been obtained by painstaking search of several million shrubs.

Development of Special Machinery Important

One other word in closing. This paper has been largely confined to the botanical aspects of our problem. But other necessary features have been carried on concurrently. Perhaps of equal importance has been the development of a system of labor saving machinery by which the whole operation can be successfully done in competition with the cheap labor of the Far East. In this, has been engaged rare mechanical talent, and the results have been particularly successful, eliminating hand labor to the extent that not only the field work like planting and cultivating; but the more exact nursery operations, preparation of beds, sowing the seed, and care of the plants, are all done with extensive labor saving machinery, necessarily of our own invention.



Guayule Plants in the Nursery, Three Months Old and Ready for Transplanting. Each Bed is 180 feet by 4 feet and Furnishes Plants Enough for Three Acres.

The Chemistry of Guayule

Rubber Comparing with the Best Grades of Plantation May Now be Prepared from Guayule by Reasonably Simple Means

BY DAVID SPENCE
Vice President, Continental Rubber Company

Although the foundation has been laid for preparation of guayule rubber that compares favorably with the best grades of plantation in both its capacity to vulcanize and the tensile-elongation properties of the finished product, its production has not yet attained the degree of quality and uniformity which characterizes the preparation of plantation. It is impossible to so regulate the harvesting of the shrub so that the rubber may be extracted before decomposition begins, and until recently no method had been known of preventing deterioration of the shrub. Improvement in modern guayule has been a result largely of careful control of the shrub in storage. Work now under way on shrub preservation and stabilization should give a still better product.

AS A matter of historical record it is interesting to note that it was to the Centennial Exposition in Philadelphia in 1876 that the first samples of rubber prepared from the guayule shrub were shipped from Durango in Mexico. Public attention was first drawn to this product about this time. It was not, however, until much later, 1900, that any quantity of this material was isolated for test purposes. In 1902 commercial operations were commenced in Mexico and in 1904 the first commercial shipment of guayule rubber was made to the Manhattan Rubber Company.

All the early products derived from the guayule shrub were of soft and sticky character. They were usually shipped in the wet as no means was then known of commercially drying the rubber and yet preserving its quality; indeed it may be said that this has been one of the biggest problems in connection with guayule rubber and its preparation. Furthermore, great difficulty was at first experienced in vulcanizing the material derived from guayule so that one finds even in the more recent literature grave questioning as to whether the product derived from guayule was actually rubber at all. One by one, however, the difficulties incidental to the preparation and utilization of guayule rubber have been overcome and while much still remains to be done the foundation has at last been laid and a rubber prepared from the guayule shrub by compartively simple means, which compares favorably with the best grades of plantation rubber in its capacity to vulcanize and in its tensile-elongation properties after vulcanization.

In the early development of means for the successful extraction of the rubber from the guayule shrub mechanical as well as solvent extraction methods were employed, although the latter were largely confined to such successful operations as those of the Diamond Rubber Company of Akron, Ohio. It is now an open secret that this company did prepare a first class rubber from guayule by solvent extraction and precipitation. The method was also used by them with great advantage over a period of years in the manufacture of rubber tires and other goods from guayule rubber purified by solution and precipitation. Owing, however, to refinements which have been developed in recent years in connection with mechanical means for the extraction of the rubber from the guayule shrub, chemical or solvent processes of extraction have become of minor interest and today I may safely say that the mechanical process is likely to reign supreme, both because of the relatively low cost of extraction and on account of the simplicity with which the shrub when in prime condition lends itself to extraction by mechanical means. This, however, does not bar consideration of solvent extraction methods if they should become necessary at any time; the complete extraction by acetone, for example, of the rubber "worms", as they are called, obtained by present-day mechanical methods is simple and entirely practical when carried out by modern methods and equipment.

The percentage of pure caoutchouc contained in the guayule shrub depends on so many different factors that I prefer not to assign any given value to this. As Dr. McCallum has shown, there are many hundred varieties of guayule, differing in their botanical characteristics and rubber-content. In addition, the rubber content of the shrub varies with the age of the plant, with the character of the soil, etc., in which it is grown and with the time of year during which it is harvested. I have obtained yields of from 10 to 12 percent of pure caoutchouc on a dry basis from wild plants picked at random and in prime condition, but while this represents, I believe, a much higher value for caoutchouc than would be obtained for hevea by similar methods of analysis, it by no means represents the maximum obtainable if selected plants are analyzed as has been shown by Dr. McCallum who has found as much as 22 per cent of pure caoutchouc in certain selected varieties of shrub now growing in California.

As you are probably aware, the rubber in guayule is almost entirely confined to the trunk root and major branches of the plant and exists there more or less in the form in which it is subsequently isolated. I say, more or less in the form in which it is isolated, because while there is no latex emulsion in the case of guayule, as you know, yet the rubber in the cells of the guayule plant does appear to undergo certain definite changes from time to time and more especially after the plant has been uprooted for extraction purposes. I can compare indeed certain changes which gradually occur in the rubber in the green shrub after uprooting with the changes brought about by the spontaneous coagulation of latex, and just as the conditions of coagulation of latex affect the ultimate quality of the resulting rubber, I have observed that, in the case of guayule, the resulting rubber is influenced either for good or for bad by certain fundamental conditions of treatment of the shrub. I shall refer to this point in detail later because I believe therein lies the main secret of success in the broader future development of guayule rubber.

The rubber in the guayule shrub is confined almost entirely to the cells underlying the bark of the trunk and root and major branches: the wood of both trunk and root contain

Delivered at the Crude Rubber Symposium of the Rubber Division, American Chemical Society, in Philadelphia, Sept. 9 and 10, and printed in the Society's organ, *Industrial and Engineering Chemistry*.

practically no rubber and the leaves and small twigs only a very small amount.

For the proper understanding of the chemical problems of the industry, it is desirable, I believe, to outline briefly the means by which the product is isolated from the shrub at the present time. In the first place, the whole shrub, root as well as branches, is crushed by a series of crusher rolls in presence of water. After crushing, the mass is fed continuously with additional water to a tube mill or mills. These mills contain flint pebbles and revolve slowly on a horizontal axis. Their action on the shrub depends on the rolling motion of the pebbles in presence of water and results in a farther disintegration of the fibre, etc. of the shrub and the agglomeration or "worming" of the rubber substance into small round spongy particles which vary in size with the condition of the shrub and with the time of milling. The fine particles of rubber or "worms" being lighter than water float on the surface of the discharge liquor from these tube mills, while the bulk of the fibre and other impurities sinks and can be readily separated.

The rubber worms which rise to the surface of the settling tanks into which the liquor from the tube mills is run are skimmed off and collected. They still contain a large quantity of cork, but are readily separated therefrom by an ingenious process in which the mass is subjected to a hydraulic pressure of two to three hundred pounds, usually while steam heated, thereby water-logging the particles of cork, causing them to sink. The mass of small individual rubber worms is then well agitated with plenty of fresh water in a beater washer and discharged into open tanks to settle. In this way a product is obtained practically free from cork particles. The purified worms are then worked into sheets on sheeter rolls, well washed and dried.

Process is Continuous

The process as carried out today is practically continuous from start to finish and with few exceptions entirely mechanical. I was surprised to see the efficiency and completeness with which the separation of the rubber in the plant is effected. Given a quantity of shrub in prime condition for milling, the constancy and uniformity of the results obtained is indeed remarkable. A good average shrub, in prime condition, will yield by present methods as much as 14-16 per cent of rubber on a bone dry basis, this rubber containing on the average about 22 per cent of acetone-soluble substances with traces of ethenal oils, nitrogen and some insoluble matter.

In regard to the acetone soluble, the amount of this varies with the shrub, and largely with the condition of the same at time of extraction; furthermore the acetone-soluble in guayule rubber can be reduced to less than half the above amount by simple digestion of the rubber worms in a boiling 2 per cent solution of caustic alkali. On account, however, of the very desirable properties for many manufacturing purposes of the acetone-soluble constituents of guayule rubber it is doubtful, in my opinion, whether the complete elimination of these from the raw rubber should be even considered. Much indeed could be said in favor of leaving a fixed percentage of the acetone-soluble materials present in the rubber. They are a valuable aid in present day manufacturing practise.

On the other hand, if the more extensive use of guayule rubber in manufacture should in course of time require a product with less acetone-soluble, this I find can be readily produced by a slight modification in existing practice. For the resins in commercial guayule rubber are not, as is generally assumed, so intimately associated with the rubber in the cells of the plant as to make separation impossible; indeed practically all of the so-called resins of commercial guayule rubber are derived from other parts of the plant tissue and are merely entrained by the rubber in the mechanical process of its extraction. I have found time and again, for example, that the resin content of a sample of rubber derived from a given lot of shrub can be reduced as much as 40 per cent by the simple desiccation of the shrub under suitable conditions, before extraction. It would not appear, therefore, to be necessary to resort to elaborate chemical processes for the production of a commercial guayule rubber to answer the major needs of manufacturing practice from the standpoint of resin-content.

The Problem of Shrub Deterioration

In regard to the more recent developments in connection with the chemistry of guayule I want to refer in particular to the problem of shrub deterioration in storage which as I pointed out in the opening paragraph of this paper has seriously affected the exploitation and development of this industry. It has long been known that the guayule shrub and particularly the rubber therein undergoes rapid deterioration soon after the shrub is pulled from the ground. It has been found that the shrub is usually in prime condition for milling about 30 days after it has been uprooted and partially dried. Thereafter, deterioration, more or less marked, and dependant on the shrub itself and on its subsequent treatment and storage becomes apparent, resulting in loss of yield of rubber but what is much worse in a product of inferior physical quality. This deterioration of the rubber in the shrub is hastened by sunlight and by many other agencies, as I have observed. If the shrub is first crushed, for example, and the crushed mass then exposed to sunlight, in less than two weeks time I have seen the yield of rubber drop from 14 per cent to 8 per cent and the physical quality of the product in even greater proportion.

It has been generally assumed that the deterioration which occurs in the shrub in storage is brought about by the oxidation of the rubber-hydrocarbon into resinous products. I have been unable to find any proof of such assumption and, on the other hand, have observed, time and again that the acetone-extract in the deteriorated, soft and sticky rubber is invariably lower, not higher, than in the rubber prepared

Young Guayule Plants Being Transplanted from Nursery to Field With a Special Machine Devised by the Continental Rubber Company. Four Rows Are Set Out at One Time.

from the shrub while in prime condition. This rather remarkable fact can be readily understood if the mechanism of the extraction process is analysed. While undoubtedly oxidation is a contributing factor to shrub deterioration it is but one of many and what actually appears to happen as I see it is the intensive physical breakdown or depolymerisation of the colloid particles of caoutchouc hastened by such agencies as are now known to bring about this result.

It is not perhaps surprising, therefore, if the manufacture of guayule has not so far attained that degree of quality and uniformity which now characterizes the production of plantation rubber. It is physically impossible to so completely regulate the harvesting of the wild shrub that the rubber in it can be extracted before decomposition sets in and no means has been known until very recently of preventing this deterioration of the shrub in storage. Furthermore the milling or extraction of stored or deteriorated shrub is enormously complicated by reason of the changes in the rubber and in the mass of the plant brought about by such storage. The marked improvement in present day guayule rubber over that of 15 years ago has come about largely from careful control of the shrub in storage and from intelligent handling of the product therefrom.

Foundation Laid for Better Product

In view of all this, it is not perhaps surprising if the efforts of those interested in the production of rubber from guayule have been directed towards finding a basic solution to this all important problem. During the past few months studies have been made which point the way, and I feel that I can say today without fear of contradiction later that the foundation has at last been laid for the production of a better and more uniform product from guayule shrub based on recent work in connection with the problem of shrub preservation and stabilization. While there is still much left to be done in the development of the best means for the complete handling of wild shrub in commercial practice, nevertheless the most surprising results have been obtained by means within the limits of practical requirements from the standpoint of cost, etc. You will appreciate that it is impossible for me at this early stage to discuss the means by which these results have been attained and I can only point out some of the improvements observed as the result of our work in this connection. In the first place we have found that not only can the deterioration of the shrub with loss of yield of rubber be effectively prevented, but the quality and purity of the resulting rubber is much improved over anything that is known today, by suitable treatment of the shrub after harvesting. Samples of rubber have been prepared and tested both at the laboratories of the Continental Rubber Company at Torreon, Mexico, and by the Bureau of Standards at Washington. Tensile-elongation properties of these samples, vulcanized alone on both pure gum and zinc oxide formulae and on a gas black tread stock compare most favorably with those of plantation rubber vulcanized under exactly similar conditions. The results of these tests are now in course of preparation for publication by the Bureau of Standards. Tensiles of over 4,000 lbs. per square inch have been obtained from pure gum compounds containing nothing but guayule rubber, suitably prepared from the shrub in order to preserve the inherent physical quality of the hydrocarbon. The guayule rubber in this case was extracted from the plantation shrub grown in California; indeed all of the samples tested by the Bureau of Standards were prepared from the cultivated shrub in California.

I believe there can no longer be any question in regard to the technical value of guayule as a form of rubber. When suitably prepared from the shrub, the rubber vulcanizes like plantation rubber and gives comparable tensile-elongation properties. Whether the rubber hydrocarbon derived from guayule is identical with that from the latex of hevea remains to be determined. In one respect, I have observed an apparent difference. The vulcanized products from guayule have a softness of texture comparable somewhat with the products of caucho balls, which is not to be found in plantation rubber; this for many purposes is an advantage and I can readily conceive of improvements in present day rubber manufacturing methods and products to be derived by the substitution of a substantial part of the plantation rubber in a given formula by this new and improved guayule. There is still much investigation and work to be done, but from now on we rubber chemists must forget most of what we knew or thought we knew regarding the properties and limitations of guayule rubber.

Guayule Industry has Gained New Impetus

With the advent of means for the stabilization and improvement of the rubber in the guayule shrub, the development of an agricultural guayule industry in this country takes on a new impetus. As the result of concentrated acreage with vastly improved control over physical conditions, it will now be possible to so harvest and treat each year's crop that the best possible results will be attained from an economic standpoint and a product of uniform composition and quality thereby produced. And just as the guayule shrub itself has sprung from one tiny seed through endless development, we will do well to remember that the scientific development of the product from guayule is yet only in its infancy compared with the preparation of plantation rubber in the Far East. I can well remember my impressions regarding some of the first samples of plantation rubber delivered in England and submitted to me for test by Sir Alfred Jones in the laboratories of the University of Liverpool. This was about 1902. Comparing the product of that time with the product of today and reviewing all that has transpired in the past twenty-five years of the plantation industry through the medium of scientific effort combined with unlimited capital, one cannot but be impressed by the progress which has been made. The development of guayule has been much more complicated and of necessity much slower on account of the very nature and character of the plant itself, and of the problems involved. Today, however, the major obstacles in the way of a successful development have been overcome and we have every reason to believe that the United States will find in the improved product from cultivated guayule a material which will meet the major requirements of manufacture.

Cultivating Guayule Plants Six Months After Transplanting. A Special Machine is Being Used. As the Plants Become Older, Cultivation is Less Frequent.

Production of Guayule Rubber

Guayule Growing in the United States Will Be in the Hands of Farmers Much as Beet Sugar Business is Now Carried on

By GEORGE H. CARNAHAN
President, Continental Rubber Company

IN COMMON with all living things, guayule must be dealt with in terms of the past, the present and the future.

It is not my intention to enlarge upon the historical features of rubber production from guayule shrub. This phase, together with other essential details, was admirably covered by Prof. Francis E. Lloyd in his illustrated brochure called "Guayule, A Rubber Plant of the Chihuahuan Desert" published by the Carnegie Institute of Washington in 1911.

The first efforts toward commercialization of guayule were along chemical lines and were technically successful but devoid of practical value. In 1903 Wm. A. Lawrence assisted by his daughter, Miss Clara Louise Lawrence, perfected and patented a mechanical process based upon subjecting shrub that had been previously masticated to "pressure and friction in the presence of water." The basic principles applied by Mr. Lawrence have been employed in producing over 95 per cent of all guayule rubber thus far marketed, which totals since 1904 approximately 130,000,000 pounds dry equivalent.

Chemistry, with Dr. Spence as your principal representative at the old Diamond works in Akron, was called upon to improve or alter the rubber after same had been segregated from the shrub, and, especially in recent years, additional mechanical processes were applied for the purpose of further freeing the rubber from extraneous matter and broadening its field of usefulness.

Like our brothers in the rubber plantation industry, the price crisis of 1921 forced guayule rubber producers to actually apply certain improved methods of shrub handling and factory processes with which we had long experimented. The result was a reduction in cost and further improvement in quality. At all events, the guayule industry weathered the storm and last year contributed 8,500,000 pounds of dry rubber to the world's supply.

This brings us down to present day operations, which, as in the past, are based upon the spontaneous growth and reproduction of guayule shrub on a limited area of north-central Mexico and south Texas. No plant even remotely similar is found elsewhere in the world.

This question of growth and reproduction is directly controlled by weather and moisture conditions that are extremely variable from year to year, and at best there are natural limitations which, we believe, will prevent a *sustained* production of more than 4,000 to 5,000 tons of dry guayule rubber per year from spontaneous growths in Mexico. Nevertheless, nature has made sufficient provision for reproduction and it is with special satisfaction that we are able to give a weighed opinion to the effect that there are almost as many living guayule plants in all Mexico today as there ever were, although the average age, size and weight is naturally less than when commercial exploitation was started.

All plant life in the semi-desert regions is limited by the supply of moisture and the inherent ability of each species and individual to withstand protracted periods of drouth. In open competition with other plants guayule has been handicapped by a relatively slow development of its root system as compared, for instance, with the so-called "gobernadora" or creosote bush which is guayule's greatest natural enemy. Now that virile guayule seed of selected varieties from cultivated sources in the United States is available in large quantity for the first time, a program has been adopted and will be applied, looking to the wholesome destruction of worthless competition on the natural ranges in Mexico and gradual replacement by valuable guayule. In time this may be expected to materially increase Mexico's output of guayule rubber from lands that at present are not even useful for grazing, always provided human agencies do not interfere.

As illustrating the possibilities of this semi-cultural operation, it may be repeated that guayule shrub has been found over a total area of approximately 130,000 square miles, but, taken in units of one square mile, it is probable that not a single guayule plant ever grew on 115,000 such units. The practical point is that guayule did not select by preference the barren rocky hillsides where we now find it. It was driven away from the better soils by irresistable competition.

The application of methods of this kind may, with time, double or treble Mexico's output of guayule rubber from semi-wild sources, but we now know that a really large and dependable expansion of output can best be secured by intensive cultivation of the plant in certain portions of two mildly frost-bitten belts that extend around the earth within the temperate zones.

In the foregoing connection it will be needless to remind you that 99 per cent of the world's supply of crude rubber now comes from a frostless band extending around the earth with lateral limits of about 14° on either side of the equator, and of this total, 90 per cent comes from a specially favored segment measuring less than one-tenth of the circumference.

Even with the necessary careful selection of soil, climate and environment that is indicated for the best economic results in growing guayule, it will be made quite clear that lack of these conditions need not prove a limiting or even a cramping factor in developing the industry in the United States to such degree as may be desirable, and that there is an abundance of suitable land available.

Guayule in Relation to Total Requirements

Let us assume by way of illustration that an organization proceeded with a definite plan to supply 25 per cent of this country's crude rubber requirements with the improved quality of guayule described by Dr. Spence, which would seem to be a sufficiently ambitious program for the time being.

Within a year or so the crude rubber requirements of the United States will hardly be less than one billion pounds annually and thus the assumed objective for guayule would be 250,000,000 pounds. To sustain this output from cultivated guayule of the types now available would require a total of 640,000 acres, one-fourth of which would mature annually. The entire area would be 1,000 square miles or a square 32 miles on a side, while the State of California alone has an area of 158,000 square miles. Of course, no such solid block would be either suitable or available, but the illustration is given to accentuate Dr. Spence's statements concerning the enormous advantage of centralized physical control as applied to both quality and uniformity of product and systematized regulation of all phases of the industry.

For the past eight years I have served as president of a company owning and operating 4,000 acres of plantation hevea in Sumatra, and have studied the more important rubber producing regions on the ground. Thus I have necessarily gained some knowledge of the present general situation and future outlook.

Without attempting a detailed comparison and disclaiming any effort to forecast the effect of large scale guayule production on the plantation industry, which forecast would manifestly be premature, I believe it will nevertheless be of interest to have me sum up certain factors that affect both branches.

Delivered at the Crude Rubber Symposium of the Rubber Division, American Chemical Society, in Philadelphia, Sept. 9 and 10, and printed in the Society's organ, *Industrial and Engineering Chemistry*.

As has been noted by Dr. McCallum, guayule rubber will be a machine grown and machine fabricated product. To follow up the illustration already given and employing such knowledge as I have of both branches of the industry, I may say that as at present conducted and with alternate day or alternate period tapping, the production of one billion pounds of rubber or America's assumed annual consumption now entails the continuous employment of 600,000 plantation laborers. That is to say that on the average each laborer necessarily employed about a producing rubber estate (not tappers only) accounts for 1660 pounds of dry rubber as a result of his year's work.

Would Require Effort of 40,000 Men

Our experience indicates that the same amount of dry guayule rubber with the stabilized and improved characteristics described by Dr. Spence, but without extraction by acetone, can be produced in the United States by well paid farmers and mechanics with human effort equivalent to 40,000 men continuously employed throughout the year, which represents an annual return of 25,000 pounds of rubber per man.

It is not contended, nor is it either necessary or desirable to assume, that the 40,000 Americans would receive in the aggregate a sum that would be less than that now paid to the 600,000 plantation coolies. It is, however, a cause for some concern among those of us who employ coolies by the thousand as to how long we will be able to secure their services for the present "all-in" cost.

No pests or diseases have thus far developed in hevea rubber that are not susceptible to control by scientific methods and eternal vigilance. In guayule the protective sheath of rubber seems to be as effective in keeping out insects and disease as it is in keeping moisture within. However, we have enough weeds and rodents to keep the farmer on the job, particularly during the first two years.

As eventually to be developed in the United States, guayule growing will be in the hands of the individual farmer or land owner who will contract his crop and be guided and financed by the factory organization in his vicinity much in the same fashion as the beet sugar business is now carried on. He will plant one-quarter or one-fifth of his total guayule area each year, depending on the type of land that he happens to own, and will thus partially iron out the labor peaks and give himself an annual income. In passing it may be noted that guayule shrub will continue to manufacture and store up rubber even if for any reason, such as a low market, it is not harvested on schedule time, and conversely it may be harvested earlier if there is sufficient incentive, such as a very high market or a national emergency.

No irrigation is employed in California and plant spacing is designed, with differing soil and moisture storage conditions, to develop a root system that will exhaust at a given period the available residual moisture remaining in the soil after the winter rains. Thereupon the plant reacts to its protective instinct. We now have plants growing in California that are 14 years old and while the rate of rubber storage decreases after the roots cover the available feeding area, still it will be unnecessary to point out to rubber manufacturers the market stabilizing possibilities of rubber storage in living tissues with a weight increment that at least covers all warehouse and interest charges.

On the other hand, if American farmers should ever find it necessary or desirable to adopt a Stevenson plan of their own, there will be no sacrifice of potential production such as resulted from hevea restriction.

Thus far all of our plans and calculations, financial and otherwise, are based on the assumption that cultivated plants will be completely uprooted and replanted after four or five years as the type of soil employed may indicate. One sufficient reason for this is our belief that over an indefinite future period there will be a marked but gradual improvement in the varieties that will be available for re-planting at the end of each cycle, and that this will be a controlling incentive. However, we already know how to harvest at the end of four years two-thirds of the rubber in the plant and induce it to resprout with the help of the large and vigorous root system already formed and left in the ground. We also have reason to believe, without having actually proven it, that this can be repeated several times at intervals of from two to three years with a greater total return of rubber at much less cost than will result from periodic uprooting.

It will be evident from what has been said that to a certain extent the two major economic factors controlling yields and costs are in conflict one with the other, but while increased tonnage of shrub grown per acre in a given time undoubtedly decreases the percentage of rubber recoverable from such shrub, it does not necessarily follow that the total rubber recovered per acre per year is less. In fact, we have secured some encouraging results in breeding a type or strain of guayule plant that will still produce a reasonable percentage of rubber under moisture conditions such as we have in some of our southern cotton States, although our experiments are not far enough advanced to warrant more than the mention of a possibility which to all of you will be sufficiently self evident and which is potentially very important.

This does not seem to be the time nor the place to deal fully with all of the economic phases of this development, and much less to indulge in a forecast of its effect on the rubber industry of the world as a whole, but that it will have an effect of some importance may be safely assumed.

All Work Done by One Company

In conclusion let me say that thus far the development of this new industry has been carried on by one organization. It has been long drawn out, expensive and intensely interesting. At no time has it ever been discouraging. Pending some definite results susceptible of commercial application it did not seem necessary or advisable to say much about it and this policy of quasi-secrecy accounts for the fact that there has been no general knowledge of what we were attempting and much less of what we had accomplished.

Now, however, the situation in this respect has changed. We believe that in the long run the interest of all concerned will be best served by a policy which will at once enlist the active cooperation of the agriculturists who will eventually grow guayule shrub on their own land as a regular crop, and the rubber manufacturers who will find a wider and more useful application for guayule rubber.

Thus the situation is submitted as is. Its future development will, we hope, be stimulated by recognition of a mutuality of interest on the part of the producer, the manufacturer and the consumer. The organization which I represent is prepared to welcome and to further such cooperation.

This View Shows a Field of Cultivated Guayule Four Years Old and Ready for Harvest.

Charles T. Wilson Co., Inc.

82 Beaver Street **New York City**

AKRON OFFICE: 507 Second National Building
Telephone Main 3799

Direct Importers of

CRUDE RUBBER

We also handle the

Only Rubber Produced

in the

United States

GUAYULE RUBBER

The product of the Border Rubber Co.
Marathon, Texas

Write for prices and deliveries

Manufacturers' inquiry solicited and will receive prompt attention

Guayule Rubber From Texas

Factory at Marathon Has Taken Full Advantage of Only Guayule District on American Side of the Rio Grande

By JOHN C. TREADWELL

Crude Rubber Consulting Engineer, New York City

WHILE THE principal source of guayule lies south of the Rio Grande, there is a district in Texas, lying north of the Big Bend and comprising some 12,000 square miles within which guayule is indigenous. Roughly, the district may be located by drawing a line from Boquillas on the Rio Grande northward to Fort Stockton in Pecos County. Then a strip of territory forty miles to the east and another forty miles to the west of this line will mark the approximate area within which guayule is found. It may be observed that this is the only known locality of native guayule within the United States, and therefore the only present source of crude rubber on American soil.

One is often asked how much guayule is produced per acre. When dealing with districts the reply can better be given in terms of square miles and the answer would be from one to three tons per square mile. But since within any given guayule district there are extensive areas where no shrub grows, the estimate to convey a definite impression should be narrowed down to small units. One large tract may produce one ton for each thirty acres, another one ton for each sixty acres, while individual patches have produced from three to five tons per acre. It may be accordingly surmised that estimating wild guayule in the field is not altogether a simple task, and at best, calculations after inspection must be supplemented largely by deduction.

In view of the difficulties just outlined, serious efforts have long been made to cultivate guayule in commercial quantities and recent results apparently show that cultivation under special conditions will prove successful.

In the spring of a good season the number of guayule seedlings in the vicinity of old patches is surprisingly large, and one is at a loss to account for the small percentage of second growth mature shrub to be encountered after the fields have been allowed to rest. Various explanations have been advanced to account for the failure to reproduce in larger quantity, among them being:

1. The former cuttings were made in dry years, and out of seeding season.

2. The large numbers of seedlings never reached maturity due to late frosts and protracted drought.

3. The seedlings and young shrubs were destroyed by pests and eaten by rabbits.

Whatever the cause, reproduction is not sufficiently encouraging to assure indefinite life to the industry if based exclusively on uncultivated sources of supply.

The floors of the valleys lie at about 4,000 feet altitude, the mountains in the vicinity of Marathon rising to heights of 6,000 to 9,000 feet. Winters in the district are at times severe and the summers are usually hot and dry. Extended seasons of drought are of periodic occurrence. Snow falls of four to six inches are not unusual and the torrential character of rainfall occasionally causes damage from floods. Generally, the climate may be classed as dry and cool in the summer months and pleasantly crisp during winter.

There are four general classes of land tenure in the guayule district of Texas, as follows:

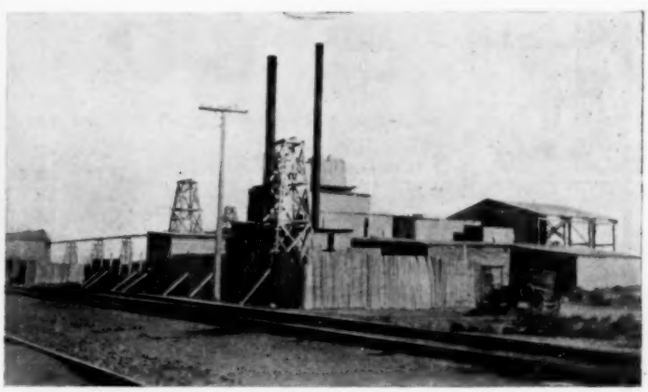
1. Land held by the State as school and Public Lands.
2. Large tracts owned by the University of Texas.
3. Large tracts held in fee and utilized as cattle ranches.
4. Lands of the State and University, leased to private individuals for grazing purposes, the guayule rights being reserved for separate treaty, which rights have been acquired by the Border Rubber Company of Marathon, Texas.

Very early in the history of the guayule industry it became known that shrub was available in Texas and a factory was built at Marathon in 1907. It was operated until 1916, with 20 pebble mills, according to the system first successfully used in Mexico. Exclusive rights to the guayule on the State and University lands were acquired, and it is estimated that the total guayule gathered during the period was some 15,000 to 18,000 tons. Some of the guayule rubber was shipped to Akron where it was treated in the factory of the Diamond Rubber Company by the Marks process of deresination, which yielded a comparatively high grade of rubber, leaving the resin as a useless by-product.

The factory at Marathon remained dormant until 1925 when it was rehabilitated and operated continuously until September, 1926, when operations were suspended pending recovery in price and demand for the product.

Activities of the Border Rubber Company are conducted under the direction of the firm of Charles T. Wilson, Inc., of New York, as principal owners, assisted by John C. Treadwell as consulting engineer who directs operations at the plant and in the field. The local organization consists of John A. Marshall, vice-president, who has been connected with the plant since construction was first started and George H. Wright, manager of the rubber division who is in direct charge of

Workmen at the Border Rubber Company's Guayule Extraction Plant at Marathon, Texas.



The Guayule Extraction Plant at Marathon. It is on the Southern Pacific Railway.

This View Shows Baled Guayule Shrub Awaiting Treatment at the Marathon Factory.

Ford Trucks Delivering Baled Shrub from Fields Which May Be As Far As 100 Miles Away.

field and factory operations, and is assisted in the field work by Chon Nunez. Lloyd Wade is factory superintendent.

The harvesting of guayule shrub is a highly specialized business which depends upon the ability to gather a force of men who are accustomed to the hardships of camp life in the desert and who have the natural instinct for seeking out locations of shrub supply. The Texas district is fortunate in this respect as there is a large native Mexican population peculiarly adapted to this type of work. They are able to find shrub, and once found, apply themselves to the task of gathering with diligence.

The shrub is pulled up by the roots and delivered to the baling camps, where it is baled by horse power hay balers, if the camps are large, or by hand baling presses of special construction if the camps are small. The camps are so chosen as to be accessible to motor trucks, the type employed by the Border Rubber Company being the 1-ton Ford truck with a special bed built to carry 1½ tons per load. The camps are situated from sixty to ninety miles from the factory, the highways being good enough to make possible a round trip in one day when the weather is fair.

Ford trucks were chosen only after careful consideration of trucks of larger capacity and even tractors and trailers, the advantages being:

1. Flexibility. Camps are widely scattered and some of them are small capacity. A Ford unit can be diverted from a large camp to a small one without seriously impeding the output of the larger camp.
2. All the natives understand the operation of Ford trucks and one man is sufficient to operate one.
3. Spare parts are carried in stock by all the dealers in the district.
4. Should a truck become incapacitated it constitutes only a small portion of the fleet and therefore does not constitute a menace to the steady flow of raw material to the factory.
5. Not of least importance is the low capital cost to be amortized, which on the basis of tons transported per dollar invested motive power constitutes only a fraction of the charge applicable to the employment of heavier machines.

These observations are particularly applicable to the special case of guayule exploitation in the Marathon field, as the guayule roads are little more than trails over rocky hills and through sandy desert, and portions of the highways are mere dirt roads which become impassable during wet weather to any but light vehicles.

As the shrub arrives at the factory it is weighed and each bale tagged with its weight and origin. The weights marked on the tags are used as controls on the milling weights, at time of consumption.

The milling process is similar to the original process developed in Mexico and consists of crushing between rolls, maceration of the shrub in pebble mills, floating the rubber on the surface of water in tanks designed to make a separation of the rubber and fibre, subjecting the recovered rubber to compression in water to free it from cork, washing in a beater washer where the cork settles, and finally, massing and pressing. The rubber is packed in jute bags containing muslin liners specially treated to prevent the rubber adhering to the bags.

The product of the Marathon factory is shipped with about 20 per cent moisture content, as it is well known that the contained moisture has a preservative effect on the rubber. A special feature of the rubber produced by the Border Rubber Company is that all the life is retained as it is never broken down in any stage of the process. The product of the Border Rubber Company is sold by the Charles T. Wilson Co., Inc., New York City.

GUAYULE

LEON BRAND, Washed and Dried

A Superior Friction and Aid to Compounding

THE CIA. EXPLOTADORA COAHUILENSE, S. A.

BAIRD RUBBER & TRADING CO., Agents

Importers of Crude Rubber

233 BROADWAY Phone: Whitehall 6890-1-2-3 **NEW YORK CITY**

The London Letter

The GENTLEMAN FROM MINCING LANE will report current opinion in London's famous rubber market in every issue of THE RUBBER AGE

The Gentleman Says "Nothing If You Do and Less If You Don't".

LONDON, October 30, 1926.

SINCE October 24, when the Colonial Office announced its new restriction scheme, the London rubber market has been in a state of confusion, largely because of the lack of any announcements, firstly, regarding unused coupons, and secondly, regarding the reassessment of estate quotas, these being the two questions which bear on the immediate future.

But while we wait, we have to face as an accomplished fact, this new restriction scheme. Briefly stated it amounts to this: When the London price of rubber averages under 15d. in any quarter, the output in the following quarter is automatically reduced to 60 per cent of standard, no matter what the percentage prevailing at the time may be. With the price averaging between 15d. and 24d. there is no increase in percentage, but if the price averages between 15d. and 21d. there is a reduction of 10 per cent. When the price averages over 24d. for a quarter, there is a 10 per cent increase (or 20 per cent if the increase is made at a time when the exportable percentage is already 80 per cent); when the price runs over 36d., there is an immediate rise in the quota to 100 per cent, that is, to unrestricted production of the standards as assessed.

This scheme is certainly not elastic by any means, at least no consumer of raw rubber would claim it to be elastic in the price range between 15d. and 24d., which is a large slice of the normal healthy price range. One can easily conceive of the price sagging through two consecutive quarters from the 80 per cent on November 1st, so that a 60 per cent quota would result (80%—70%—60%). If during this period unused coupons are used up, and London stocks again drop back to a small figure, there is nothing to prevent a runaway market. And even if prices should rise to just below 24d. during this interval, no relief in the way of accelerated production would be forthcoming.

CERTAINLY THE horse would be out of the barn, and it would be too late to lock the door after prices rose to a 36d. level, and the following quarter 100 per cent production was released. Independent observers reluctantly admit that with all due respect to the sincerity of the framers of the Stevenson Scheme, who undoubtedly earnestly aim at stability in prices, this new scheme seems to set the stage for a possible repetition of the 1925 boom.

As I have already pointed out, the coupon question and the possibility of reassessment of estates is of immense importance and it is inconceivable that those in charge of this scheme would plan an elaborate new programme of this sort without careful provision to prevent piling up of excess coupons, which would naturally nullify the whole scheme. But any change on these two counts certainly would tend still further to tighten up the restriction scheme and afford no future relief to the consumer. That of course is the reason the change will be made!

Four years ago the pivotal price was 15d., then it was advanced to 21d., and now it is 24d. Consumers naturally ask just what the big idea is. Is the cost of rubber steadily rising, or is the demand exceeding production so that prices would naturally go higher anyway, or is the higher price being demanded just because it appears that it can be gotten. Since neither of the first two conditions prevails, it would not be surprising if the consumers put some faith in the third.

By strenous efforts toward the end of July, consumers managed to keep the price level above 1/9d. and thus insured a continued unrestricted production of rubber for the next three months. This new scheme serves notice on consumers that they must keep the price at 1/9d. in order to maintain supplies at 80 per cent of standard production and that in order to get back to unrestricted supplies prices must be pushed up to 2/-, or more than 48 cents in your currency!

IF THE price goes below 1/9d. a fall from 80 per cent to 70 per cent results. In other words, *protection is vouchsafed to the raw rubber producer under* 1/9d., *and to the consumer only when the price goes over* 2/-. It is evident that rubber producers believe that 80 per cent of standard production will be sufficient to meet the world's demands this winter. The new scheme plainly aims at stabilization on that new base—80 per cent of standard production and 2/- as pivotal price.

London stocks have risen to over 41,000 tons. Sometime back I wrote you that there was a concerted movement on the part of large producers voluntarily to hold stocks of rubber so as to stabilize prices at a high level. However, a fair share—in some quarters said to be more than half—of these London stocks are in the hands of dealers, ear-marked for speculators and manufacturers, or at least this is the current opinion in London rubber circles.

To the extent that speculative interests have absorbed this 41 000 tons, London stocks cannot be considered as a safety valve for the industry, simply because speculative interest is likely to be stampeded in dumping this rubber if the price sags, and to hold on to it if the market runs away—just the opposite effect to that which the producers' gentlemen's agreement desired to realize. Nobody can say to what extent speculative interest holds London stocks, but it is evident that this is a factor of some importance in the situation.

Yours Faithfully,

THE GENTLEMAN FROM MINCING LANE.

WE offer a service of practical experience for the purchase or sale of crude rubber on a commission basis.

We also offer comprehensive facilities to all users of and dealers in rubber for covering their requirements and hedging their commitments by contracts for the future delivery of rubber on the Rubber Exchange of New York, Inc.

Messrs. Harriss, Irby & Vose, of New York, are our clearing brokers.

Correspondence invited.

HENDERSON BROTHERS & CO., Inc.

BROKERS IN CRUDE RUBBER

New York Office — 60 BEAVER ST.
Akron Office — OHIO BUILDING

H. H. Henderson, *Pres.*
H. M. Henderson, *Vice-Pres. & Treas.*
M. C. McComas, *Secy.*
Telephones Whitehall 9630 9631 9632 9633

Members Rubber Exchange of N. Y., Inc.
Cable Address—Harhenbro, New York

Charles T. Wilson Co., Inc.
82 Beaver Street New York

Importers of

CRUDE RUBBER

Members Rubber Exchange of New York, Inc.
Members Rubber Exchange Clearing House, Inc.

AKRON OFFICE: 507 Second National Bldg.
Telephone Main 3799

HENDERSON, HELM & CO., INC.
44 Beaver Street
New York City

Importers - CRUDE RUBBER - Dealers

Specializing in RUBBER FUTURES
on the RUBBER EXCHANGE

MEMBERS
THE RUBBER EXCHANGE OF NEW YORK
THE RUBBER EXCHANGE CLEARING HOUSE

Telephone: Bowling Green 6200

WEEKLY MARKET REVIEW ON REQUEST

Indefinite Reports Hamper Rubber Trading

Crude Rubber Marks Time for Coupon Announcement and then Turns Active Despite Ignorance Concerning Actual Releases

NEW YORK, Nov. 3—Curtailment in automobile production gave bearish sellers a reason for operations twelve days ago and these traders held the market down until the British authorities announced their new restriction regulations for the quarter and restriction year beginning Nov. 1. The cut to 80 per cent of standard production which was construed as meaning only exports of about 67,000 tons in the quarter, divided the rubber market into two factions, one of which sold and the other bought. March, December and January were very active.

Traders Were Bewildered

The new production regulations bewildered traders, as the estate assessments were not announced and thus no indication was given as to the quarterly tonnages to be released. As the result of the lack of definite information there was no inclination to trade and the market continued its decline. A general slowing up of operations in the large factories was also an important contributing factor. But on the 27th speculative operators sold near months and bought January, February and March which caused these deliveries to close with slight gains.

A firmer aspect marked crude rubber during succeeding days, but trading both in New York and London was characterized by caution. Fluctuations were confined to narrow limits. It was announced that beginning Nov. 1 a daily average will be computed in London after the market closes, based upon buyers' quotations prevailing at 11.30 a. m, 3.30 and 5 p. m., and expressed as near as possible to an one-eighth pence. Eighty per cent exports became a reality when the official average price for the August-October quarter was announced in London as 20.1997 d.

Coupon Rumors Detrimental

Rumors regarding the status of unused coupons caused a sharp decline on the 1st. December, January and May declined from 100 to 120 points due to an unsettled market and liquidations of bullish traders. December showed wide fluctuations, starting off at 41.50, moving up to 42.20 and closing at 41.70. Heavy liquidation resulted in the most active day on the Exchange since June 3, business totaling 1,427½ tons.

Starting off today with a decline of 140 to 200 points, the market after taking up all the cheap offerings staged a rally which continued to the close, winding up within ten points of the previous closing. In the street selling of actual rubber was hedged against on the Exchange by dealers. The Exchange again had a very active day, larger even than the previous one, as transactions totaled 1,440 tons.

NOV. 3 OPEN MARKET PRICES

Plantations—			
Ribbed Smoked Sheets			
Spot	.41¼	@	—
November	.41¼	@	—
December	.41⅝	@	—
Jan./Mar.	.42½	@	—
April/June	.43½	@	—
First Latex, crepe spot	.41⅜	@	—
Amber Crepe, No. 2, spot	.39⅛	@	—
" " No. 3	.38½	@	—
" " No. 4	.39¼	@	—
Brown Crepe, Rolled	.35	@	—
" " Clean, thin	.37½	@	—
" " Specky	.37½	@	—
Pontianac—			
Bangermassin	.17½	@	—
Palembang	Nominal		
Prime Pressed	.27⅞	@	—
Sarawak	.17½	@	—
Paras—			
Up-river Fine	.37	@	.38
" Medium	.31	@	.31½
" Coarse	.26½	@	.27
Acre Bolivian, fine	.37½	@	.38½
Tapajos, fine	.35	@	.36½
Islands, fine	.31½	@	.32½
Cut Beni Bolivian, fine	.39	@	.40
Caucho Ball—			
Upper, shipment	.27½	@	.28
Centrals—			
Corinto, scrap	.28	@	.28½
Esmeraldo, sausage	.26	@	—
Guayule, w and d	.26	@	.29½
Africans—			
Benguela, No. 2	Nominal		
Congo, upper, black	Nominal		
" " red	Nominal		
Kassai, Prime Red	Nominal		
Balata—			
Block, Columbia	Nominal		
" Cuidad	.50	@	.51
Surinam, sheet	.74	@	.75
Gutta Percha—			
Siak	.32½	@	—
Red Macassar	3.00	@	3.50
Chicle—			
Mexican, Yucatan	.65	@	—

LONDON MARKET

Standard Ribbed Smoked Sheets—*Buyers*	
Spot	19⅝d
November	19⅜
December	20¼
Jan./March	20½
April/June	20⅝

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—*Sellers*	
Spot	19¾d
November	19⅝
December	20
Jan./Mar.	20⅜

RECLAIMED RUBBER

NEW YORK, Nov. 4, 1926—Curtailment in tire production has had a slight effect on the reclaimed rubber market, but the movement of reclaims is still fairly good. Although some of the larger rubber factories have been engaged in taking inventories and tire operations have slowed down, many of the reclaimers are as busy now as they were a month ago.

High Tensile Black				
Super-Reclaim No. 1	lb.	.19	@	.20
" " No. 2	lb.	.16	@	.17
Shoe				
Unwashed	lb.	.08¾	@	.09
Washed	lb.	.11¾	@	.12¼
Tube				
No. 1 (Floating)	lb.	.18	@	.21
No. 2 (Compounded)	lb.	.15½	@	.16½
Tires				
Black, unwashed	lb.	.09	@	.10
Black, washed	lb.	.11	@	.11¼
Black selected tires	lb.	.10½	@	.11

SCRAP RUBBER

NEW YORK, Nov. 4, 1926—Although scrap rubber quotations are slightly easier, some grades continue firm. Reclaimers are in the market for deliveries up to the end of 1926, and withdrawals on contracts are reported to be at a steady pace. The crude rubber situation is having an adverse effect on scrap.

[*Prices to Consumer*]

Auto tire peelings	ton	35.00	@36.00
Standard White auto	ton	50.00	@52.50
Mixed auto	ton	26.00	@27.00
Bicycle tires	ton	24.00	@25.00
Clean solid truck tires	ton	40.00	@42.00
Boots and shoes		.02¼	@ .02⅜
Arctics, untrimmed		.01¼	@ .01⅜
Arctics, trimmed		.01⅝	@ .01¾
Inner tubes, No. 1		.09¾	@ .10
Inner tubes, No. 2, compounded		.08	@ .08½
Air Brake Hose	ton	30.00	@32.00
Rubber hose	ton	21.00	@23.00
Dark Gray	lb.	.12	@ .13
Light Gray	lb.	.13	@ .14
White	lb.	.17	@ .17½
Truck, Heavy Gravity	lb.	.08¾	@ .09½
" Light Gravity	lb.	.09¾	@ .10¼
Miscellaneous			
Mechanical Blends	lb.	.08	@ .09
Red, High Grade	lb.	.17½	@ .18½

Closing Prices on Rubber Exchange of New York, Inc.

OCT. 18 TO NOV. 3

		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	SALES*
Oct.	18	42.50	42.90	43.40	43.40	43.60	43.90	44.20	44.40	44.60	44.80	45.00	45.20	——	91
	19	42.50	42.80	43.10	43.40	43.70	43.90	44.20	44.40	44.60	44.80	45.00	45.20	——	292
	20	42.40	42.60	43.00	43.20	43.50	43.70	44.00	44.10	44.40	44.70	44.90	45.10	——	136
	21	42.20	42.40	42.80	42.90	43.20	43.50	43.70	43.80	44.00	44.40	44.60	44.80	——	209
	22	42.00	42.20	42.60	42.90	43.10	43.40	43.60	43.80	44.00	44.40	44.60	44.80	——	159
	23	42.40	42.90	43.30	43.60	43.80	44.00	44.20	44.40	44.60	44.80	45.00	45.20	——	175
	25	42.20	42.70	43.00	43.30	43.50	44.00	44.10	44.20	44.40	44.70	44.90	45.10	——	288
	26	42.10	42.40	43.00	43.00	43.30	43.70	43.80	43.90	44.10	44.40	44.60	44.80	——	147
	27	——	42.00	42.70	43.10	43.30	43.70	43.90	44.00	44.20	44.40	44.60	44.80	——	156
	28	——	42.30	42.80	43.20	43.50	44.00	44.10	44.30	44.40	44.60	44.80	45.00	——	156
	29	——	42.30	42.90	43.20	43.60	44.00	44.20	44.30	44.50	44.60	44.80	45.00	——	195
	30	——	42.30	42.80	43.10	43.30	43.80	43.90	44.40	44.50	44.50	44.70	44.90	——	93
Nov.	1	——	41.30	41.70	41.90	42.40	42.90	43.20	43.40	43.50	43.60	43.90	44.30	44.50	571
	2	Exchange closed for Election Day													
	3	——	41.20	41.60	41.80	42.10	42.40	42.80	43.20	43.40	43.50	43.70	43.90	44.10	576

(*) In lots of 2½ tons each; totals are for old and new contracts.
(Prices are for new contracts)

PARA-FLUX *A Universal Softener*

(Reg. U. S. Patent Office)

for TIRES, MECHANICALS, RECLAIMS *and* FRICTION TAPE

The C. P. HALL COMPANY

118 Central Savings & Trust Bldg. AKRON, OHIO

PEQUANOC RUBBER COMPANY

Office and Works: BUTLER, N. J.

MANUFACTURERS OF

RECLAIMED RUBBER

WITH A REPUTATION FOR

UNIFORMITY -- RELIABILITY -- CLEANLINESS

Aero Brand

AMERICAN CYANAMID COMPANY — AERO BRAND — PRODUCTS

DPG
DIPHENYLGUANIDINE

DOTG
DI-ORTHO-TOLYLGUANIDINE

Aero Brand Accelerators are made from our own air-nitrogen bases. Careful technical control of each step of the manufacturing process assures absolute uniformity of grade at over 99% pure.

Ample stocks of Aero Brand DPG and DOTG are carried at six convenient points.

AMERICAN CYANAMID COMPANY

INCORPORATED

511 Fifth Avenue New York, N. Y.

Rubber Chemicals Continue in Good Demand

Leading Chemical Firms Report a Slight Recession from Record High Levels in September, but are Well Satisfied

NEW YORK, Nov. 4, 1926—Although there has been a slight falling off in the demand for certain rubber chemicals and compounding ingredients, most of the chemical houses catering to the rubber trade are highly satisfied with the total movement. It is evident that few manufacturers have had heavy stocks of chemicals on hand and this condition has made for stabilized quotations. Schedules for the balance of this month and December indicate that deliveries on contracts will continue at a rate which compares well with that reported two weeks ago. The present situation is very unusual for this season of the year, and as a result no tendency toward easier prices is yet seen. It is expected that quotations on most rubber chemicals will hold firm for the balance of the year. Current prices follow:

ACCELERATORS

Organic

A-7	lb.	.70 @	—
A-40	lb.	.70 @	—
A-19	lb.	.75 @	—
A-11	lb.	.75 @	—
Aledhyde ammonia, crystals	lb.	.82 @	—
Aniline oil, drums	lb.	.17 @	.17½
"BB"	lb.	1.05 @	1.07
Captax	lb.	1.20 @	1.50
Crylene	lb.	.70 @	—
paste	lb.	.50 @	—
Di-Ortho-Tolylguanidine	lb.	1.08 @	—
Diphenylguanidine	lb.	.85 @	.88
Ethylidene aniline	lb.	.60 @	.65
Excellerex	lb.	.35 @	.40
Formaldehyde-Aniline	lb.	.40 @	.42
Grasselerator 102	lb.	.80 @	.82
Grasselerator 552	lb.	4.80 @	5.00
Grasselerator 809	lb.	1.25 @	1.50
Heptone	lb.	.55 @	—
Hexamethylene-tetramine	lb.	.80 @	.82½
Monex	lb.	3.25 @	—
Paraphenylenediamine	lb.	1.25 @	1.30
Piperidine-Piperidyldithio-Carbamate	lb.	4.80 @	5.00
R & H 50	lb.	— @	.65
Super-Sulphur No. 1	lb.	.50 @	—
Super-Sulphur No. 2	lb.	.18 @	.25
Tensilac, No. 41	lb.	.65 @	—
Thiocarbanilide, kegs	lb.	.28½ @	—
Trimene	lb.	.75 @	—
base	lb.	1.20 @	1.35
Triphenylguanidine	lb.	.70 @	.73
Tuads	lb.	3.25 @	3.50
Vulcone	lb.	.75 @	.79
Z. 88	lb.	.75 @	1.00
Zimate	lb.	4.00 @	—

Inorganic

Lead, sublimed blue	lb	.10 @	.10½
Lead, white	lb.	.10¾ @	—
Litharge, domestic	lb.	.12 @	—
Magnesia, calcined, light	lb.	.06½ @	—
heavy	lb.	.04½ @	—

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.32 @	.35
Ultramarine	lb.	.08 @	.35

Browns

Siena, Italian	lb.	.04 @	.08
Umber, Turkey	lb.	.04 @	.06

Greens

Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.33
Chromium Oxide, bbl.	lb.	.31 @	.38

Reds

Antimony crimson, 15/17	lb.	.27 @	—
sulphur free	lb.	.48 @	.50
vermillion 15/17	lb.	.37½ @	—
golden 15/17 F.S.	lb.	.16 @	.22
Indian English	lb.	.11 @	.13
Oximony	lb.	.13¼ @	—
Para toner	lb.	.80 @	.90
Red oxide, reduced	lb.	.10 @	.11
pure	lb.	.14 @	.15
Toluidine toner	lb.	1.75 @	1.85
Venetian red	lb.	.02½ @	.05
Vermillion, quicksilver, English	lb.	1.55 @	1.60

Whites

Albalith	lb.	.05¾ @	.06¼
Lithopone, Akcolith	lb.	.05¾ @	.06
Litnopone, Azolith	lb.	.05¾ @	.06¼
Zinc Oxide—American Process XX red	lb.	.07½ @	.07¾
Kadox, black label, kegs	lb.	.10⅞ @	.11⅛
blue " " "		.09⅞ @	.10⅛
red " " "		.08⅞ @	.09⅛
American Azo: ZZZ (lead free)	lb.	.07¼ @	.07¾
ZZ (under 5% leaded)	lb.	.06⅞ @	.07⅜
Zinc Oxide— French Process White seal	lb.	.12⅜ @	—
Green seal	lb.	.11⅛ @	—
Red seal	lb.	.10⅛ @	—

Yellows

Chrome	lb.	.17 @	.18
Ocher, French medium	lb.	.02¾ @	.03
domestic	lb.	.01¾ @	.02½

COMPOUNDING MATERIALS

Aluminum Flake (f.o.b. plant)	ton	21.85 @	24.50
hydrate light	lb.	.16 @	.17
Ammonia carbonate	lb.	.13½ @	.14
Are-O-Sil	ton	8.00 @	11.00
Asbestine	ton	16.00 @	18.50
Barium carbonate	ton	54.00 @	55.00
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½ @	—
Blacks Arrow "Aerfloted"	lb.	.09 @	.13
Bone Black	lb.	.05½ @	.11
Carbon, compressed	lb.	.08½ @	.12½
" uncompressed	lb.	.08 @	.12
Drop Black	lb.	.07½ @	.14
Lamp "	lb.	.12 @	.40
Micronex	lb.	.09 @	.13
Thermatomic carbon	lb.	.05 @	—
Blanc fixe dry f.o.b. works	lb.	.04¼ @	—
Carrara filler	lb.	.01¾ @	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	lb.	.02½ @	.04½
Clay, China, domestic	ton	.08 @	.09
Aerfloted Suprex	ton	11.00 @	20.00
Blue Ridge, Dark	ton	9.00 @	—
" " Light	ton	12.00 @	—
Dixie	ton	15.00 @	30.00
Langford	ton	12.00 @	22.00
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Glues, extra white	lb.	.19½ @	.29
medium white	lb.	.18 @	.24
common bone	lb.	.12 @	.14
Graphite flake, bbls.	lb.	.06½ @	.10
Magnesia, carbonate	lb.	.08 @	.09
Mica, powdered	ton	65.00 @	80.00
Rotten Stone (powdered)	lb.	.02½ @	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	16.00 @	18.00
Terra Alba	cwt.	1.15 @	1.75
Tripoli, white	lb.	.02 @	.02¼
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Quaker	ton	13.00 @	15.00
Superfine	ton	10.00 @	12.00
Sussex	ton	8.00 @	10.00
Wood pulp XXX	ton	35.00 @	—
" " X	ton	25.00 @	—

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M.R.	ton	35.00 @	38.00
Hydrocarbon, Hard	ton	29.00 @	35.00
Hydrocarbon, Soft	ton	29.00 @	—
320/340 M.P. hydrocarbon (c. l. factory)	ton	47.00 @	52.00
300/310 M.P. hydrocarbon (c. l. factory)	ton	42.00 @	47.00
Paradura	ton	70.00 @	72.50
Robertson, MR, solid	ton	35.00 @	75.00
M.R. (gran)	ton	42.00 @	80.00

SOFTENERS

Acids

Muriatic, 20%	cwt.	.95 @	1.05
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.29½ @	—

Alkalies

Caustic soda, 76%	cwt.	3.20 @	—
Soda ash, 58% C.L.	cwt.	1.43 @	1.45½

Oils

Castor, No. 3 bbls.	lb.	.11¾ @	—
Corn, crude, bbls.	lb.	.10¾ @	—
refined	lb.	.11¾ @	—
Cottonseed, crude		.07¼ @	—
Cycline	gal.	.26 @	.34
Fluxrite	lb.	.05 @	.06
Glycerine, C.P. drums	lb.	.30 @	.32
Linseed, Raw C.L. bbl.	lb.	.10¾ @	—
Liquid Rubber	lb.	.12 @	—
Moldrite	lb.	.05 @	.06
Palm Lagos	lb.	.08½ @	.08⅝
Niger	lb.	.08⅛ @	.08¼
Peanut,domestic,crude	lb.	.13 @	—
Petrolatum, white	lb.	.09¼ @	.09½
amber	lb.	.03¾ @	.04
dark amber	lb.	.03⅛ @	.03¾
Pine, steam distilled	lb.	.70 @	.72
Rapeseed, refined	gal.	.82 @	.90
blown	gal.	1.00 @	—
Rosin, first rectified	gal.	.75 @	—
second rectified	gal.	.80 @	—
Soya Bean, crude		.13 @	—
Synthecite	lb.	.06 @	—
Tar, commercial	gal.	.30 @	.42

Resins and Pitches

Pitch, Burgundy	lb.	.06½ @	.07½
coal tar	gal.	.05½ @	.06
pine	bbl.	9.00 @	10.00
Rosin, grade K	bbl.	13.60 @	—
Tar Retort	bbl.	16.00 @	16.50
kiln burned	bbl.	15.00 @	16.00
Tackol	lb.	.09 @	.15

Solvents

Acetone, pure	lb.	.14½ @	—
Alcohol denatured, No. 1 bbls.	gal.	.34 @	.47
Benzol, 90%	gal.	.30 @	—
pure		.30 @	—
Carbon bisulphide	lb.	.05¼ @	.06¼
tetrachloride	lb.	.06¾ @	—
Motor gasoline, steel bbls.	gal.	.21 @	—
Naptha, V. M. & P.	gal.	.16¼ @	—
Turpentine, spirits	gal.	.93½ @	.94½
wood	gal.	.84 @	.87

Waxes

Beeswax	lb.	.44 @	.45
Carnauba, No. 1	lb.	.50 @	.51
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.06 @	.06¼
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
ParaffineWhiteA.M.P.	lb.	.05 @	.05¼
Yellow A.M.P.	lb.	.05¼ @	.05⅜
Sweet Wax	bbl.	.10 @	—

ANTI-OXIDANTS

Age-Rite	lb.	.85 @	.90
Antox	lb.	.88 @	—
VGB	lb.	.66 @	—

SUBSTITUTES

Black	lb.	.08½ @	.14
White	lb.	.10 @	.17
Brown	lb.	.10 @	.15

VULCANIZING INGREDIENTS

Ethyl Chloride, Cyl.	lb.	.55 @	—
" " Drums	lb.	.45 @	—
Sulphur Chloride (drums)	lb.	.04 @	—
Sulphur flour Superfine, bags	cwt.	2.20 @	2.75
" bbls.	cwt.	2.35 @	3.10
100% pure, refined, bags	cwt.	2.60 @	3.15
bbls.	cwt.	2.85 @	3.40

H. MUEHLSTEIN & COMPANY, Inc.

CRUDE AND SCRAP

RUBBER

"For Service"

NEW YORK - 41 East 42nd St.
AKRON - 1111 Akron Savings & Loan Building
CHICAGO - 327 S. La Salle St.
BOSTON - 176 Federal St.
LOS ANGELES - 728 South Hill Street

WAREHOUSES: Jersey City, N. J. and Akron, Ohio

Perfect Beads

Entire freedom from bead trouble in the construction of straight side tires is assured by the use of either National "(Patent)" High Tensile Strength, Flat Woven, Bead Braid or our new (Pratt Patent) Bead Cables. These cables, made to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

Write for working samples of either National flat braid or Pratt cables (no charge to tire manufacturers) and full information as to our products and service.

Our engineering department tests beads and furnishes complete confidential reports as to their stretch, set and bursting point, without charge. Inquiries solicited regarding this special service.

National Standard Company
Niles, Michigan

EMBOSSING CALENDERS

For Artificial Leather, Oil Cloth, Carriage and Automobile Covers

DRYING MACHINES

with Copper or tinned iron Cylinders for Cotton Ducks, Drills and Sheetings

The Textile-Finishing Machinery Co.
OFFICE, No. 83 EXCHANGE PLACE
PROVIDENCE, R. I.

WHITING

Domestic

SUPERFINE

Snow-White

300 mesh

A *quality* product at moderate price

WM. S. GRAY & CO.
342 Madison Ave.
New York

PREFERRED POSITIONS OBTAINABLE

¶ Advertisers will find it to their advantage to arrange *now* for their space during 1927 in THE RUBBER AGE.

¶ A few preferred positions are still open, but at the rate which contracts are being made for next year, they won't last long.

¶ Just indicate the space you will need and we will send you complete information by return mail.

THE RUBBER AGE
225 Fourth Ave., New York City

Cotton Resists Effect of Crop Report

To the Surprise of Many, a Market Borne Down by Hedge Selling Fails to be Further Depressed by Crop Estimate

NEW YORK, Nov. 3, 1926—Southern hedge selling, which many cotton traders fear with good reason, struck the market forcibly a fortnight ago and had its effect in holding quotations down. For days prior to the publication of the Government forecast, the market fluctuated within a limited range, influenced on one hand by hedges, generally clear weather, long liquidation and some attempts on the short side; on the other, by the holding movement, good cable advices and a bullish view of consumption statistics.

During these pre-crop report days the market lacked striking features so far as the actual trading was concerned. The spinners kept buying in lots up to 500 bales for delivery next year or in 1928, and there was also a certain amount of investment buying, but bull speculation was entirely lacking. Buying some years ahead was not confined to domestic mills, but foreign spinners shared in this singular feature of a nervous market.

The way to any enduring advance was always barred by hedge selling, and it was the consensus of belief that until the major part of the crop had been lifted from the market, it was useless to expect a sustained rise in prices.

On the 25th to the echo of a Government crop estimate of 17,454,000 bales and the stupefaction of those who thought that it would break wide open, the market closed slightly higher than on the previous day. The South evidently took warning from Eugene Meyer, Jr., chairman of the President's commission and relied on his promise that the Federal Intermediate Credit banks stood ready to loan $250,000,000 for orderly marketing through organized agencies. Under the force of the estimate quotations first fell over 30 points, but later rallied 40 to 47 points in a way that was difficult to believe. It was said that the day could not be matched in the whole history of the New York market.

In subsequent days hedge selling and scattered liquidation put cotton down and tried to hold it there, but the momentum of the holding back movement helped the market on the 28th, and large trade buying the next day, aided by several bullish factors both here and abroad, caused the market to continue its rise until the effect of an increase in hedge sales and pre-holiday languor made themselves felt.

Current COTTON and FABRIC *Quotations*

COTTON CLOSING PRICES

	Open	High	Low	Close Nov. 3	Close Oct. 18
December	12.63	12.65	12.32	12.37	12.79
January	12.70	12.70	12.39	12.42	12.87
March	12.82	12.84	12.59	12.61	13.10
May	13.02	13.02	12.77	12.79	13.31
July	13.16	13.16	13.95	12.95	13.50

TIRE FABRICS

CORD			
Peeler, carded, 23/5/3	lb.	.37½ @	.38½
Peeler, carded, 23/4/3	lb.	.37½ @	.39
Peeler, carded, 15/3/3	lb.	.40 @	.41
Peeler, carded, 13/3/3	lb.	.39 @	.41
Egyptian, carded, 23/5/3	lb.	.48 @	—
Egyptian, combed 23/5/3	lb.	.55 @	.56
SQUARE WOVEN			
Carded American, 17¼ oz. 23-11 ply	lb.	.38 @	.40½
Carded American, 17¼ oz. 10-5 ply	lb.	.38 @	.40
LENO BREAKER			
Carded American, 8 oz.	lb.	.35 @	.37
Carded American, 10 oz.	lb.	.35 @	.37
CHAFERS			
Carded American, 8¼ oz.	lb.	.33 @	—
Carded American, 9½ oz.	lb.	.33½ @	—
Carded American, 12 oz.	lb.	.33 @	—
Carded American, 14 oz.	lb.	.32 @	—

SHEETINGS

40-inch 2.50-yard	yd.	.11½ @	—
40-inch 2.85-yard	yd.	.10 @	—
40-inch 3.15-yard	yd.	.11¼ @	—
40-inch 3.60-yard	yd.	.09 @	.09¼
40-inch 3.75-yard	yd.	.07¾ @	.08¼
40-inch 4.25-yard	yd.	.07 @	.07¼

DUCKS

Belting and Hose	lb.	.27½ @	—
Enameling	lb.	.31 @	.34
Shoe Ducks	lb.	.34 @	.35
Single filling	lb.	.13 @	.15
Double filling	lb.	.15 @	.16

Tire Fabrics

Considerable interest was shown in tire fabrics during the last two weeks and many inquiries for good sized quantities were reported. Quotations were somewhat irregular and showed a spread of up to five cents a pound on various qualities. Tire factories were in the market to cover their requirements through the first half of 1927. It was possible to buy carded peeler cord 23 5-3 ply at 37 cents a pound, the same price applying to square woven. Probably as a result of easier prices in these grades, most of the interest centered in carded peeler cords, with a little shown in chafers and brakers. Fabric mills were not so well sold ahead that they would not consider additional business during any of the early months of 1927. Competition for contracts has been very keen.

Sheetings

Sheetings were quiet, with the price situation unchanged, awaiting more active interest. There were reports of rubber trade inquiry for about 500,000 yards at under quoted prices. Inquiry centered about 40-inch, 2.85 yard, and 40-inch 2.50 yard, as well as 40-inch, 7-ounce part waste osnaburgs. Many buyers could not find goods at the prices they were willing to pay.

Ducks

A number of factors expect a definite change to the 60-inch enameling duck as consumers are said to see economies in purchasing that width. For the best makes of single filling 15 cents was quoted, and off-grades were held for 13 cents. However, the price position is a trifle higher than it was immediately after the raw cotton report was published. During the past fortnight a fair number of small orders were placed, but although there were many bids heard for heavy goods, buyers' price ideas in many cases were too low to interest mills. Most of the mills are so well fixed with commitments that they can afford to wait for new developments.

J. H. LANE & CO.

Tire Fabrics Cord Fabrics

Enameling Duck Drill Sheeting

Osnaburg and Special Constructions

250 W. 57 Street, NEW YORK 323 South Franklin St., CHICAGO

The Market Place

WHERE TO OBTAIN

Machinery, fabrics, chemicals, compounding ingredients, crude and reclaimed rubber, consulting chemical and engineering services. 1.

ACCELERATORS—X L O and Diphenyl Guanidine.

Dovan Chemical Corp.

30 Church St. New York

ACCELERATORS — Two new accelerators: Vulcone and Di-ortho-tolylguanidine.

E. I. du Pont de Nemours & Co., Inc.

Dyestuffs Dept. Sales Div.

Wilmington, Del.

ACCELERATORS

Grasselerator 102
Grasselerator 552
Grasselerator 808

Grasselli Chemical Co.

Rubber Service Dept.

347 Madison Ave., New York

ACCELERATORS— Every lot is tested before shipment and a written guarantee of quality furnished.

Roessler & Hasslacher Chem. Co.

709 Sixth Ave. N. Y. City

ACCELERATORS—A19, A7, Thiocarbanilid.

The RUBBER SERVICE Laboratories Co.

611 Peoples Savings & Trust Bldg.

Akron Ohio

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.

Rare Metal Products Co.

Belleville, N. J.

Direct Factory Representation

The* BLUE LIST *of the Industry

Your Products Listed Here

reach buyers in rubber factories at a cost lower than is possible by any other method.

ARRANGE FOR YOUR LISTING TODAY!

ASBESTINE— Specially prepared for use in Rubber. Send for liberal working sample.

SOLE PRODUCERS

International Pulp Co.

41 Park Row, New York City

BEAD CABLES— National Flat Woven and Pratt Patent Bead Cables.

National Standard Co.

Niles, Mich.

BOLTON BIAS CUTTER

Cuts cord or flat woven fabrics with equal ease and precision. In use all over the world.

Spadone Machine Co., Inc.

15 Park Row New York

CALENDERS—Embossing, for artificial leather, oil cloth etc.

Textile-Finishing Machinery Co.

83 Exchange Place, Providence, R. I.

CARBON BLACK—*Micronex* the world's standard gas black, universally known as the "King of Rubber Pigments."

Binney & Smith Co.

41 East 42nd St. New York City

CARBON BLACK

Godfrey L. Cabot, Inc.

Manufacturers for forty years.

940 Old South Bldg., Boston, Mass.
612 Metropolitan Bldg., Akron, O.

CARBON BLACK—*Aerfloted* Arrow Black for rubber compounding. Standard for grit-free uniformity.

J. M. Huber, Inc.

130 West 42nd St. New York

CARBON BLACK or any other compounding material used by rubber manufacturers can be marketed at low cost by listing it in *The Market Place.*

CATALPO — The universal and standard rubber pigment now being used in treads, solids, tubes, carcass frictions, etc.

Moore & Munger

33 Rector Street
New York City

The Most Economical Form of Advertising

The Market Place Section of THE RUBBER AGE contains the *only* alphabetically arranged listings of small 'ads' available in the rubber industry. Your advertisement in this section will not only be easy to find, but it will produce excellent results at very moderate costs. Let us send you details.

THE MARKET PLACE Section Continued on Second Page Following.

STATISTICAL SECTION

TIRES & TUBES
CRUDE RUBBER

AUTOMOBILES
GASOLINE

WITH THIS issue the London rubber price table on this page is changed to show the first five days' prices in the new rubber restriction quarter. It will be seen that instead of being stimulated by the tightening up of restriction on November 1, the price has changed but little and still remains below the demanded 21 pence. The new restriction regulations specify that if the price fails to average 21 pence during the quarter, Malaya and Ceylon will be allowed to export only 70 per cent of their standard production after February 1. Should the average fall below 15 pence, the exportable percentage after February 1 will be cut to 60 per cent. An average of 24 pence would increase the allowance to 90 per cent but such an average is regarded as improbable. Changes in the situation will be reflected in the table on this page in every issue. All of these tables are currently brought up to date; they are the only ones in any rubber publication that are so handled.

Average Spot Closing Prices--Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1920

Year	*Cents*	*Year*	*Cents*	*Years*	*Cents*
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23		

Average Monthly Price per Pound since 1921

Months	1921 *Cents*	1922 *Cents*	1923 *Cents*	1924 *Cents*	1925 *Cents*	1926 *Cents*
Jan.	19.18	18.82	32.73	25.86	36.71	79.50
Feb.	17.96	16.12	35.14	25.29	36.01	62.25
Mar.	17.05	14.53	34.21	22.83	41.00	59.00
Apr.	16.73	15.99	32.48	22.51	43.64	51.25
May	15.82	15.25	27.39	19.89	58.47	47.75
June	12.49	15.11	26.88	18.81	77.26	42.50
July	14.01	14.67	26.10	22.16	103.16	41.03
Aug.	14.04	13.93	28.84	26.17	82.99	38.50
Sept.	14.53	14.44	28.95	27.56	88.88	41.00
Oct.	16.02	19.78	26.93	31.13	98.01	42.50
Nov.	18.06	23.88	27.14	34.33	104.80	
Dec.	20.47	27.42	26.60	37.88	98.51	
Average for Year	16.36	17.50	29.45	26.20	72 46	

London Closing Prices of Ribbed Smoked Sheet

(In pence per pound)

Fifth Restriction Year—First Quarter

Day	*Nov.*	*Dec.*	*Jan.*	*Day*	*Nov.*	*Dec.*	*Jan.*
1	20⅜			16			
2	19½			17			
3	19⅞			18			
4	20			19			
5	20⅜			20			
6				21			
7				22			
8				23			
9				24			
10				25			
11				26			
12				27			
13				28			
14				29			
15				30			
				31			

(The average price for the period for which daily prices are reported above is approximately 19.975 pence. The British Colonial Secretary has announced that only 70% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26
Nov-Jan	14 285	14.175	17.9983	46 709
Feb-Apr	16 858	12 917	19.356	28.103
May-July	14.242	10.974	38.469	21.001
Aug.-Oct.	14.944	14.632	43.269	20.199

U. S. Imports and Exports of Crude Rubber.

	Gross Imports			Re-exports			Net Imports
YEARS	*Long Tons*	*Total Declared Value*	*Average Declared Value per pound Cents*	*Long Tons*	*Total Declared Value*	*Average Declared Value per pound Cents*	*Long Tons*
1900	22,026	$28,577,789	57.92	1,718	$2,839,668	73.77	20,308
1901	24,617	28,120,218	51.00	1,663	2,425,727	65.11	22,954
1902	22,702	25,158,591	49.47	1,457	1,877,698	57.52	21,245
1903	24,886	35,152,642	63.06	1,646	2,598,416	70.47	23,240
1904	27,629	43,784,297	70.75	1,540	2,749,234	79.70	26,089
1905	28,637	48,517,906	75.63	1,616	3,149,989	87.00	27,021
1906	30,316	53,391,137	78.62	1,676	3,153,775	84.02	28,640
1907	30,649	49,813,361	72.56	1,832	3,509,902	85.55	28,817
1908	34,058	44,696,526	58.59	1,655	2,466,428	66.52	32,403
1909	41,950	79,264,817	84.35	2,161	4,233,921	87.46	39,789
1910	40,241	98,007,295	108.73	2,749	8,134,064	132.07	37,494
1911	36,987	74,410,550	89.81	2,523	4,977,174	88.07	34,464
1912	52,705	99,567,071	84.34	2,456	4,692,262	85.31	50,249
1913	51,732	76,820,739	66.29	1,881	3,396,429	80.62	49,851
1914	63,868	70,472,704	49.26	2,618	3,244,346	55.32	61,250
1915	98,876	111,031,144	50.13	2,082	2,357,350	50.54	96,794
1916	120,576	159,745,475	59.15	4,098	5,330,100	58.07	116,478
1917	181,089	233,220,904	57.49	4,000	5,305,289	59.21	117,089
1918	145,518	146,378,318	44.91	2,746	3,133,622	50.95	142,772
1919	239,259	215,820,113	40.27	2,282	2,205,629	43.15	236,977
1920	252,922	242,795,778	42.86	4,160	2,846,898	30.55	248,762
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.28	317,747
1925:							
Jan.	32,898	22,406,756	30.41	1,162	963,593	37.02	31,736
Feb.	24,696	18,532,115	33.50	979	779,406	35.58	23,717
Mar.	33,072	25,146,691	35.94	1,345	1,105,119	36.69	31,727
Apr.	32,506	24,874,562	34.16	1,130	1,009,305	39.86	31,376
May	36,932	30,311,754	36.64	1,203	1,323,445	49.12	35,729
June	31,569	26,855,883	37.98	1,198	1,577,106	58.75	30,371
July	32,455	33,701,723	46.36	1,278	2,132,681	74.52	31,177
Aug.	33,412	39,834,348	53.22	1,131	1,623,258	64.08	32,281
Sept.	26,367	36,686,013	62.11	1,154	1,820,360	70.41	25,213
Oct.	34,651	50,027,338	64.45	1,132	1,989,291	78.48	33,519
Nov.	37,755	56,271,963	66.54	1,605	2,898,930	80.65	36,150
Dec.	40,329	65,055,868	72.02	1,510	2,625,259	77.61	38,819
	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.26	40,320
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40 21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,022	39.02	1,437	1,519,870	47.20	35,675
Oct.							
Nov.							
Dec.							

ALL THE LEADERS

Are represented in this section. Purchasing agents can rely on the concerns listed as thoroughly reliable in every way.

The Market Place

2.

Great Oaks From Little Acorns Grow

—and likewise a small beginning in the matter of advertising space is the first step to a bigger business!

Start Now by using listings in

THE MARKET PLACE

Rates are low— and results are sure.

CRUDE RUBBER — All Grades. Washed - Dried - Milled.
Send us Your Inquiries.
Gibraltar Rubber Corp.
West New York, N. J.

ENGINEERS
Machinists, Iron and Steel Founders
Standard and Special
Rubber Working Machinery
The Adamson Machine Co.
Akron, Ohio

CRUDE RUBBER
BROKERS
Henderson Brothers Co., Inc.
60 Beaver St., New York City
Members Rubber Exchange of N. Y.

FABRICS— Spots and Contracts: Tire Fabrics, Enameling ducks, Tube Wrapping Tapes.
H. Frank Jones
395 Broadway New York City

CRUDE RUBBER
Importers and Dealers
Members Rubber Exchange of N. Y. and Rubber Exchange Clearing House
Henderson, Helm & Co., Inc.
44 Beaver St., New York
Weekly Market Review on Request

FABRICS—Tire, cords, enameling ducks, drills, sheetings, osnaburgs.
J. H. Lane & Co.
250 West 57th St. New York City

CHEMICALS — Accelerators
Trimene Base, Heptene, Monex, Crylene, Lithex, Aniline Oil.
Clay—Mineral Flour, Seminole (Georgia).
Antioxidant—VGB, a proven product.
Labels—all-rubber two color brands.
Naugatuck Chemical Co.
1790 Broadway, New York.

CRUDE RUBBER
We Solicit Your Inquiries
H. Muehlstein & Co., Inc.
41 East 42nd. St., N. Y. City
Offices in Akron, Chicago, Boston.

FABRICS— Tire fabrics—coarse builders, chafers, breakers in all grades.
New England Southern Mills
LAWRENCE & CO.
24 Thomas St. New York
Boston, Philadelphia, Chicago, St. Louis, San Francisco

CHEMICALS and compounding ingredients; Clay, Whiting, Accelerators, Mineral Rubber.
R. T. Vanderbilt Co.
50 East 42nd St. New York City

CRUDE RUBBER
Importers
Members Rubber Exchange of N. Y., Inc. and Rubber Exchange Clearing House, Inc.
Charles T. Wilson Co., Inc.
82 Beaver St., New York
AKRON OFFICE: 507 Second Nat'l. B'ldg.

FACTICE—Prevents blooming, makes colors fast and a smoother batch.
Stamford Rubber Supply Co.
Stamford, Conn.

CHEMICALS and COLORS
for all classes of mixing and cure. Complete rubber laboratory service for our customers.
Wishnick-Tumpeer, Inc.
New York Chicago Cleveland Boston

DIPHENYLGUANIDINE
Aero Brand, product of the highest purity from dependable source of supply.
American Cyanamid Co.
511 Fifth Ave. New York City.

FLUXITE — Liquid and Solid — A rubber softener and aging compound of great efficiency.
Damascus Mnfg. Corp.
E. 93rd. St. & Cassius Ave.,
CLEVELAND, OHIO

CONSULT BANNER
Before You Buy
TIRE BUILDING MACHINES
The Banner Machine Co.
Columbiana, Ohio
Paul A. Frank, Akron, Ohio, Agent.

DRY KILN—for drying crude rubber and chemicals—Hunter Process.
Carrier Engineering Corporation
750 Frelinghuysen Ave. Newark N. J.

GUAYULE—"Duro" Brand washed and dried ready for compounding.
Continental Rubber Co.
120 Broadway New York

THE MARKET PLACE Section Continued on Second Page Following.

United States Tire and Tube Statistics[1]

Production, Sales, and Inventories[2]

AUTOMOBILE CASINGS

	Production During Month					Sales During Month					Inventory at End of Month				
	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926
Jan.	2,740	4,170	4,294	4,740	4,721	2,194	4,114	3,785	4,013	2,974	5,566	6,261	6,411	7,949	9,947
Feb.	2,779	4,291	4,372	4,908	4,865	2,144	3,568	3,849	3,924	3,436	6,255	6,966	7,020	8,928	11,164
Mar.	3,528	5,154	4,570	5,276	5,456	2,847	4,570	3,988	4,657	4,561	6,911	7,561	7,684	9,510	12,004
Apr.	3,202	4,719	4,410	5,341	5,346	2,853	4,106	4,018	5,498	4,980	7,286	8,118	8,219	9,088	12,461
May	3,629	4,880	4,051	5,467	5,023	3,608	3,793	3,693	5,954	5,211	7,364	9,209	8,442	8,611	12,343
June	3,785	3,943	3,506	5,418	5,422	4,281	3,448	3,671	6,737	5,724	6,723	9,387	8,207	7,243	11,968
July	3,302	2,657	3,403	5,587	4,950	3,678	3,463	4,748	6,298	6,337	6,445	8,628	6,851	6,421	10,592
Aug.	3,874	3,141	4,313	5,607	5,872	4,153	3,803	5,010	4,760	6,944	6,173	8,078	5,969	7,261	9,732
Sept.	3,340	2,706	4,708	5,007		3,407	3,563	4,539	4,569		6,149	7,197	6,033	7,681	
Oct.	3,566	3,148	5,169	4,505		3,534	3,821	4,196	5,580		6,244	6,502	7,118	6,670	
Nov.	3,644	3,200	4,253	4,229		3,248	3,408	4,480	3,671		6,620	6,252	6,943	6,955	
Dec.	3,548	3,250	4,584	4,760		4,040	3,547	4,143	3,601		6,132	5,772	7,427	8,142	
	40,932	45,259	51,633	60,845		39,987	45,204	50,120	59,262						

AUTOMOBILE INNER TUBES

	Production During Month					Sales During Month					Inventory at End of Month				
	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926
Jan.	3,125	5,269	5,184	6,343	6,809	2,552	5,091	4,723	5,576	3,723	6,996	7,784	8,960	11,570	14,361
Feb.	3,462	5,386	5,424	6,339	6,825	2,310	4,085	4,530	4,971	3,736	8,189	9,029	9,786	13,023	17,090
Mar.	4,023	6,501	5,625	7,000	7,030	2,848	5,214	4,667	5,711	4,987	9,321	10,321	10,877	14,236	19,131
Apr.	3,534	5,679	5,380	6,851	6,554	3,162	4,825	4,782	6,704	5,051	9,640	11,192	11,503	13,618	20,674
May	3,961	5,757	4,992	6,846	6,149	3,995	4,651	4,865	8,040	6,304	9,586	12,390	11,682	12,501	21,141
June	4,174	4,787	4,658	6,942	6,171	5,391	4,882	5,286	9,032	6,898	8,249	11,899	10,888	10,409	20,243
July	4,091	3,500	5,143	7,544	5,729	4,905	5,374	7,190	9,140	8,569	7,568	9,862	8,845	8,635	17,267
Aug.	5,078	4,771	6,688	7,618	7,424	5,733	5,800	7,493	6,923	9,579	6,943	9,267	7,678	9,271	15,462
Sept.	4,669	4,339	7,342	7,254		4,797	4,966	6,908	6,665		6,886	8,610	8,052	9,950	
Oct.	5,050	5,140	7,861	6,612		4,618	4,848	5,700	7,845		7,317	9,198	9,803	8,726	
Nov.	5,135	4,602	6,136	6,266		4,165	4,604	6,332	5,406		8,280	8,925	10,224	9,491	
Dec.	4,548	4,385	6,273	6,999		5,197	4,732	5,540	4,991		7,643	8,425	11,052	11,313	
	50,850	60,116	70,706	82,614		49,673	59,072	68,016	81,004						

(1) *Statistics of The Rubber Association of America, raised to 100%.* (2) *All figures expressed in thousands.*

Stock of Crude Rubber in United States and London

(All Quantities in Long Tons)

UNITED STATES

At End of	ON HAND			AFLOAT			ON HAND AND AFLOAT		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
Jan.	——	60,870	55,198	——	36,759	46,296	——	97,629	100,434
Feb.	——	54,109	58,035	——	41,475	46,935	——	95,584	104,970
Mar.	——	52,494	61,822	——	40,577	43,567	——	93,071	105,389
Apr.	——	50,143	55,261	——	53,465	41,905	——	103,608	97,166
May	——	52,064	64,360	——	46,846	40,303	——	98,910	104,663
June	——	50,997	60,460	——	51,202	40,907	——	102,199	101,367
July	——	46,245	64,900	——	46,003	38,062	——	92,248	102,962
Aug.	——	42,354	60,870	——	41,254	37,360	——	83,608	98,230
Sept.	——	36,367	62,078	——	55,151	42,464	——	91,518	105,542
Oct.	55,378	34,085		46,359	51,098		101,737	85,183	
Nov.	59,017	34,885		35,685	42,692		94,702	86,577	
Dec.	56,080	51,215		46,216	48,208		102,296	99,423	

(Rubber Association of America figures raised to 100%.)

LONDON

(In Wharves and Warehouses—Figures Include Latex)

At End of:	1920	1921	1922	1923	1924	1925	1926
January	19,300	56,573	67,232	73,498	57,460	27,172	9,994
February	18,329	59,439	67,623	70,483	56,732	23,425	10,004
March	18,969	63,913	66,670	63,438	55,647	18,104	13,750
April	20,072	68,759	68,637	58,770	54,559	12,949	18,951
May	20,921	70,403	70,146	54,439	51,615	5,895	20,896
June	22,517	69,408	71,597	51,050	51,115	5,318	23,894
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727
August	30,674	73,211	72,112	48,427	49,700	4,619	30,764
September	35,504	72,175	70,977	54,523	44,011	5,453	
October	41,743	69,229	68,536	58,891	37,523	5,086	
November	45,550	70,786	68,548	60,074	33,593	3,869	
December	50,652	69,792	72,299	60,246	29,488	5,697	

United States Consumption of Gasoline

(Gallons)

MONTHS:	1918	1919	1920	1921	1922	1923	1924	1925	1926
January	144,579,291	169,240,627	236,073,140	294,750,791	282,717,148	456,967,163	500,420,689	595,413,000	720,358,000
February	147,204,377	185,900,192	248,395,214	225,195,372	262,925,732	380,093,070	402,703,876	543,640,000	650,718,000
March	219,333,317	201,004,317	256,020,539	346,164,546	380,406,778	446,460,208	467,181,088	625,053,000	779,571,000
April	265,151,411	243,440,615	297,000,463	333,290,921	385,230,994	485,716,788	607,175,026	798,305,000	831,410,000
May	313,824,603	327,610,273	378,912,692	354,263,486	499,724,405	582,535,781	672,495,321	841,787,000	989,857,000
June	306,677,723	305,960,438	427,747,291	442,924,973	506,959,446	633,504,590	682,409,140	868,350,000	969,051,000
July	353,589,555	396,242,260	434,878,617	457,758,078	566,099,329	674,019,467	789,666,590	963,071,000	1,014,804,000
August	339,435,744	376,484,274	479,741,391	505,035,827	583,687,932	692,154,000	828,057,347	931,901,000	1,103,844,000
September	284,685,213	367,633,742	450,888,670	438,083,634	507,924,207	655,797,616	718,068,623	848,867,000	942,858,000
October	299,642,892	338,429,709	384,802,246	454,995,551	490,393,454	621,172,668	751,499,199	831,774,000	
November	245,278,844	284,620,809	366,567,344	350,548,481	471,616,103	538,308,809	698,359,199	757,744,000	
December	209,863,377	238,245,230	289,673,556	313,015,596	434,399,514	518,305,120	657,967,000	759,699,000	
TOTAL	3,129,266,347	3,434,812,486	4,250,696,163	4,516,027,256	5,372,985,042	6,685,035,280	7,770,238,000	9,365,604,000	

The Market Place

3.

HEELS, soles and strips
We can make any special brand with your molds or with ours. Best quality at the lowest price. Consult us.
P. & B. Rubber Mfg. Co., Inc.
Laurel Hills, Long Island, N. Y.

MOLDS AND CORES—
Tire building equipment; general machine work.
The Akron Equipment Co.
Akron, Ohio

RECLAIMED RUBBER—
Uniformity, reliability, cleanliness.
Pequanoc Rubber Co.
Butler, N. J.

LINERS — PROCESSED
For
Various Rubber Stocks
The Cleveland Liner & Mfg. Co.
5508 Maurice Ave., Cleveland, O.

MOLDS & CORES—Tire building machines; tire finishing stands; tubing machines; hydraulic presses.
The Akron Standard Mold Co.
Akron, Ohio

RECLAIMED RUBBER
of Standardized Quality.
NO. 188 FOR TUBES
Philadelphia Rubber Works Co.
New York Akron Philadelphia

MACHINERY—
Heater Presses, Molds and Cores, Tubing Machines.
The Williams Foundry & Mach. Co.
"In Business Since 1888"
Akron, Ohio

MOLDS & CORES—for automobile tires; general machine work.
Kuhlke Machine Co.
Akron, Ohio

RECLAIMED RUBBER—
for all purposes.
Rubber Regenerating Co.
Naugatuck, Conn.

MANDRELS--CIRCULAR
and Economy Calender Shells
Prompt Service—Let us quote you.
The Clyde E. Lowe Co.
2976 E. 81st St., Cleveland, Ohio

"NU-GUM" RUBBER
Produced from No. 1 Floating Tubes. Absolutely pure — no oils —no compound added. *Specific Gravity*, .98.
E. L. Bullock & Sons, Inc.
99 John St. New York City

RECLAIMED RUBBER
A standardized grade for every requirement.
U. S. Rubber Reclaiming Co., Inc.
100 E. 42nd St., New York, N. Y.
"43 Years Serving the Industry Solely as Reclaimers"

MICA — Water Ground and Water Floated — 160 Mesh —Absolutely Free from Grit. Akron Stocks, also Factory Shipments.
The C. P. Hall Co.
116 Central Savings & Trust Bldg., Akron

PINE TAR — Retort "Sunny South", "Pentarco", "American". Brands for Tires, Tubes, Mechanicals,—Reclaim. *The Best Softener*
E. W. Colledge
P. O. Box 356 Jacksonville, Fla.
Agents in New York, Chicago, Cleveland.

RECLAIMED RUBBER
The Xylos Rubber Co.
Akron, Ohio
CAPACITY 250,000 POUNDS DAILY

MICA—160 mesh—water ground —water floated—free from foreign matter.
Stocks carried at Trenton, N. J.— Cleveland, O.—Chicago, Ill.
The Harshaw Fuller & Goodwin Company
Hanna Building, Cleveland, Ohio

POWER EQUIPMENT
Boilers — Compressors — Pumps
Generators — Tanks — Heaters
Rubber Machinery
F. William Stocker
Hoboken, New Jersey.

RED OXIDE—A special grinding, guaranteed uniform in color and quality.
Joseph A. McNulty
114 Liberty St. New York City

MOLDS
FOR TIRES, MECHANICAL GOODS & DRUGGIST SUNDRIES.
The Akron Rubber Mold & Machine Co.
AKRON, OHIO.

RECLAIMED RUBBER
We specialize in fine Grey, Black and Red Reclaimed Rubber.
Send us Your Inquiries
The Defiance Rubber Co.
Defiance, Ohio

RUBBER—Crude and scrap, all grades.
H. Muehlstein & Co.
Liggett Bldg. New York
Akron, Chicago, Boston, Hoboken

THE MARKET PLACE Section Continued on Second Page Following.

Exports of Crude Rubber from Principal Producing Countries

(Figures in Long Tons)

	British Malaya[1]								Dutch East Indies[2]			French[3]		
	Gross Exports	*Imports*	*Net Exports*	*Ceylon*[3]	*India & Burma*[3]	*Br. North Borneo*[4] *Sarawak*[4]		*Siam*[4]	*Java & Madura*	*Sumatra E. Coast*	*Other D.E.I.*	*Indo-China*	*Amazon Valley*[4]	*Total*[5]
1923	252,016	70,432	181,584	37,112	6,416	5,433	1,744	1,718	32,938	44,002	57,822	5,606	19,859	394,263
1924	259,760	107,419	152,341	37,351	7,697	6,485	1,892	2,962	42,446	52,499	80,347	6,688	23,164	413,872
1925	316,825	158,022	158,803	45,684	10,082	8,460	2,308	5,378	46,643	62,678	119,271		25,307	
1925:														
Jan.	19,183	10,132	9,051	3,065	1,090	605	180	404	3,053	5,097	5,858	701	1,712	30,816
Feb.	21,622	10,071	11,551	2,207	1,121	469	148	283	3,490	5,139	8,569	586	2,977	36,540
Mar.	26,836	13,399	13,437	4,201	984	756	209	437	4,583	5,499	10,807	487	2,459	43,859
Apr.	22,414	11,751	10,663	3,250	684	483	164	384	4,121	4,663	8,536	482	1,585	35,015
May	26,667	12,979	13,688	2,600	585	717	189	489	3,624	4,455	12,006	599	2,588	41,540
June	27,894	14,706	13,188	3,502	831	1,046	195	430	4,187	4,667	10,644	833	1,653	41,176
July	24,809	16,192	8,617	4,487	680	955	218	533	4,719	5,244	10,516	411	1,142	37,522
Aug.	27,753	12,025	15,728	3,409	671	548	194	436	3,210	5,186	9,445	484	1,810	41,121
Sept.	29,425	12,913	16,512	4,758	745	766	218	533	3,364	4,913	10,628	764	2,140	45,341
Oct.	28,711	14,986	13,725	5,270	516	639	199	708	3,516	5,511	11,767	683	2,240	44,774
Nov.	31,648	14,904	16,744	3,980	1,044	838	186	411	4,657	6,349	11,958	991	2,620	49,778
Dec.	29,863	13,964	15,899	4,955	1,131	638	208	330	4,119	5,955	8,537	860	2,361	45,013
	316,825	158,022	158,803	45,684	10,082	8,460	2,308	5,378	46,643	62,678	119,271	7,881	25,307	492,495
1926:														
Jan.	30,452	10,237	20,433	4,058	1,273	416	196	288	4,397	6,277	8,081	915	1,284	47,618
Feb.	30,440	8,306	22,134	4,941	725	488	141	253	4,474	5,734	6,801	554	2,759	49,004
Mar.	35,012	14,800	20,212	5,708	1,113	792	232	418	4,865	5,612	11,880	573	2,126	53,531
Apr.	23,727	10,565	13,162	3,484	590	679	251	294	4,522	4,598	6,208	410	2,318	36,516
May	31,231	10,604	20,627	3,600	691	927	157	279	4,742	5,293	8,606	502	1,353	46,777
June	30,624	11,764	18,860	3,906	452	779	160	275	5,440	6,111	9,844	549	1,213	47,589
July	28,824	15,280	13,544	4,800					4,929	5,522	12,864	1,521		
Aug.	34,625	13,595	21,030									378		
Sept.														
Oct.														
Nov.														
Dec.														

(1) Malayan net exports cannot be taken as Malayan production since much of the imported rubber contains a high percentge of moisture and impurities which are eliminated before it is re-exported; the Malayan figures do not contain rubber exported as latex which on the basis of 3 pounds per gallon amounted to 99 tons in 1923, 957 tons in 1924 and 3,101 tons in 1925. (2) Ceylon Chamber of Commerce statistics until 1926. (3) Official statistics. (4) Figures for Sarawak, British North Borneo and Siam are imports from these territories into Singapore through which port practically their entire production moves. (5) Exports from "Other Dutch East Indies" are chiefly native rubber which contains one-third of moisture and impurities for which no allowance has been made in the statistics; rubber shipped as latex has not been included and amounted to 6,355 tons in 1923, 2,735 tons in 1924 and 6,207 tons in 11 months of 1925. (6) Exports through Para, Manaos and Iquitos. (7) This total includes the net exports from British Malaya and all the figures shown for the other territories.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States	*United Kingdom*	*France* (abd)	*Germany*	*Canada* (ac)	*Japan* (ac)	*Italy*	*Russia* (ce)	*Australia* (cf)	*Belgium* (d)	*Netherlands* (abcd)	*Sweden* (abcd)	*Norway* (abc)	*Denmark* (abd)
1919	236,977	42,671	19,951	5,584	8,770	10,688	9,894	75	733	3,995	2,771	2,022	437	673
1920	248,762	56,844	15,868	11,890	11,912	6,015	6,123	62	1,040	3,840	5,510	1,567	241	479
1921	179,678	42,087	16,981	21,920	8,248	22,981	3,906	165	554	1,705	1,022	813	178	251
1922	296,267	11,724	27,644	27,546	9,366	16,449	6,430	2,453	2,649	172	-3,807	1,248	321	87
1923	300,372	12,700	31,067	18,519	13,299	17,181	8,489	4,506	1,631	2,184	792	1,391	448	354
1924	317,747	-11,550	34,488	22,727	14,420	19,612	8,764	824	3,127	2,688	-807	1,781	669	473
1925	381,815	4,061	36,911	33,937	19,825	12,743	11,412	7,088	4,217	2,930	875	1,690	701	440
1925:														
January	31,736	-284	2,147	4,303	1,432	797	552	333	192	331	109	164	64	16
February	23,717	-2,492	3,529	3,690	1,278	658	908	1,000	338	275	88	136	145	37
March	31,727	-3,396	3,924	2,784	2,349	689	1,463	1,083	357	373	56	183	77	71
April	31,376	-2,961	3,069	3,574	1,397	719	817	535	314	97	181	149	47	22
May	35,729	-8,650	3,223	3,834	1,532	863	1,060	1,999	385	228	47	126	47	16
June	30,371	619	2,387	3,239	1,681	2,095	1,506	59	378	329	120	97	43	74
July	31,177	2,204	1,827	2,606	1,613	813	650	16	341	176	28	114	45	24
August	32,281	3,825	1,109	2,942	1,582	786	631	85	297	169	76	119	53	35
September	25,213	5,369	4,633	2,667	1,202	936	939	234	429	283	136	102	54	20
October	33,519	1,203	3,039	2,325	1,799	1,060	914	21	243	255	60	159	38	38
November	36,150	2,466	4,654	1,260	1,712	2,140	1,157	190	512	236	-12	219	55	52
December	38,819	6,158	3,370	713	2,248	1,187	815	1,533	431	178	-14	122	33	35
1926:														
January	40,320	6,439	3,170	703	2,188	892	760	332	358	76	154	123	46	51
February	31,435	3,114	3,513	1,113	1,685	741	1,041	643	432	275	89	171	82	94
March	40,316	8,907	4,790	1,342	2,079	864	1,037	832	469	129	227	213	31	55
Apr.	33,416	8,275	4,834	1,781	1,615		865	402		71	93	204	27	23
May	28,704	6,773	2,937	1,848	1,239			200			241	110	24	47
June	23,795	5,894	2,327	1,655	1,188			983			214	178		74
July	34,267	6,758		2,202				176				195		
Aug.														
Sept.														
Oct.														
Nov.														
Dec.														

a—Including gutta percha. b—Including balata. c—Reexports not deducted. d—Believed to include scrap and reclaimed rubber. e—Russian statistics are exports from United Kingdom only to Russia. f—Australian annual statistics including 1924 are exports to Australia from Malaya, Ceylon, Dutch East Indies and United Kingdom; monthly figures and total for 1925 are exports from Malaya, Ceylon, and Java only. -Minus sign, reexports in excess of imports. *All statistics from original official trade returns.*

The Market Place

4.

IF YOU need a light rubber for padding or shock absorbing, you should use RUBBER FOAM (in sheets).
Waterproof; will never rot; one-fourth the weight of cork. *Write for booklet.*
C/M Company of America
181 N. Dearborn St., Chicago, Ill.
EXCLUSIVE DISTRIBUTORS

SANITARY GOODS—
Dress Shields, Baby Pants, Aprons, Elastic Belts, Bloomers, Stepins, Bibs, Guimps and Brassieres.
SPECIAL GOODS CUT TO ORDER
Rand Rubber Co., Inc.
Sumner Ave. & Halsey St., Brooklyn, N. Y.

TUBING, INSULATING and Straining Machinery
"Perfected" equipment for inner tubes, treads, and tire beads. Circular hose looms.
John Royle & Sons
Paterson, New Jersey

RUBBER PRODUCTS
Sanitary Goods, Sheetings, Bathing Caps, Aprons, Rubber Specialties.
Sheet Gum Cut to Pattern
RANDPRINT RUBBER
Rand Rubber Co., Inc.
Sumner Ave. & Halsey St., Brooklyn, N. Y.

STRIP CUTTING MACHINES
For cutting all rubber, composition and plain or impregnated fabrics.
Cameron Machine Co.
61 Poplar St., Brooklyn, N. Y.

USED MACHINERY
Mills, Calenders, Grinders, Washers
New and Old Rubber Scrap
Rubber Cloth Remnants
M. Norton & Co.
Locust St. Medford, Mass.

RUBBER PRODUCTS
Manufacturers of all classes of Rubber Goods.
United States Rubber Co.
1790 Broadway, New York City

SULPHUR— *"Tire"* Brand Superfine; *"Tube"* Brand Velvet; quality Sulphur for the rubber trade.
Stauffer Chemical Co.,
of Texas.
Scanlon Bldg. Houston, Texas
San Francisco, Cal. Chauncey, N. Y.

WHITING—Domestic
RUBBER MAKERS STANDARD
Wm. S. Gray & Co.
342 Madison Ave., New York

RUBBER SCRAP
Always Buying and Selling
Rubber Waste, Cured and Uncured, Hard Rubber, Balata, Gutta Percha.
HERMAN WEBER
Newark & Jackson Sts., Hoboken, N. J.

TECHNOLOGIST — Testing, formulæ, costs, experimental work on all classes of rubber products. Litigation.
Fred'k. J. Maywald, F.C.S.
5 William St., Belleville, N. J.

WHITING & PARIS WHITE
manufactured from *Genuine English Chalk* and *Cliffstone*—no adulterations.
Southwark Mfg. Co.
Camden New Jersey

RUBBER SUBSTITUTES
White, brown and black.
Carter Bell Mfg. Co.
150 Nassau St. New York

TIRES—For Every Transportation need from the Ford Runabout to the heaviest truck and Multiple passenger coach.
Fisk Rubber Co.
250 West 57th St., N. Y. City

WOOD FLOUR (wood pulp)
FINELY POWDERED WHITE PINE WOOD Like Flour—Uniform in Quality
Send for Samples
Becker, Moore & Company, Inc.
MANUFACTURERS
North Tonawanda, New York

SANITARY GOODS —
Dress Shields, Reducing Garments, Sheetings, Aprons, Bathing Caps, etc.
I. B. Kleinert Rubber Co.
485 Fifth Ave., N. Y. City

TIRES
"Goes a long way to make friends"
General Tire & Rubber Co.
Akron, Ohio

ZINC OXIDES — Including KADOX and "Albalith."
The New Jersey Zinc Sales Company
New York Pittsburgh Chicago
Cleveland San Francisco

Buyers will see your products if they are listed in THE MARKET PLACE regularly, for they consult this section twice-every-month for their needs.

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
1924																																
Jan.	25¼	26¼	26¾	26¼	26¾	—	26¾	26½	26¾	26¼	26¾	26¾	—	25¾	26¼	26	26½	25⅝	25½	—	25⅝	25¼	25½	24¾	25¾	—	—	25¾	25¼	25	25⅛	25⅞
Feb.	25⅝	25⅝	—	25¼	25⅝	25¼	25⅝	25⅝	25⅝	—	25⅝	25⅝	—	25⅝	25¼	25¼	—	25⅛	25⅛	25	25⅝	—	25½	—	25⅝	—	—	25½	25½	—	25¼	25¼
Mar.	25⅛	—	24¾	24	24¼	24½	24½	24¼	—	23¾	23¼	22¾	—	22½	23¼	—	21	21⅝	22	22	21¾	22½	—	23¾	22¾	21¾	21¾	21¾	22	—	22	22¾
Apr.	22½	—	23¾	—	22¾	21¾	21½	22¾	22¼	22¼	22¼	22¼	—	22¾	22¼	23⅛	22¾	—	23	—	22½	22⅜	23	23	23¾	23⅛	23	23	22⅞	22⅝	—	22½
May	22⅜	21⅞	22	—	21¾	21¾	21½	21	21	21¾	—	20⅞	20⅜	19⅞	20	19	18	17	18	18½	18	18⅞	18⅞	19⅛	18½	18⅞	18⅞	18⅞	18¾	18¾	18¾	19⅞
June	—	18⅞	19¾	19¾	19½	19½	19⅝	19⅝	20¼	19½	19½	19	18⅞	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18½	18½	18½	18½	18½	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝	18⅝
July	18⅞	19⅛	19⅜	19¾	19¾	19½	19⅝	19⅝	19⅞	19⅞	20¼	21	18⅝	18⅝	21	21⅜	21⅜	21⅜	21⅜	21⅜	21¾	22⅜	22⅜	22⅜	22⅜	22¾	22¾	23⅛	23⅛	23¼	23¼	22⅞
Aug.	23⅜	23⅜	24	24	25	25⅛	25⅝	27⅛	27	27¼	27¼	27¼	25⅝	25	25½	26½	27⅛	27⅛	26⅞	26⅞	27¼	26⅞	26⅞	26⅞	26⅞	26⅞	26⅞	26⅞	26⅞	26⅞	—	26⅞
Sept.	26⅜	26⅜	26½	26½	26⅞	26⅞	29⅛	29¼	29½	30	31	31½	—	31½	30⅞	30¾	31½	31½	—	31¾	32¼	32¾	32¾	32⅝	32⅝	32¾	32¾	32⅝	32⅝	32⅝	34⅜	31⅛
Oct.	26⅞	29½	29½	29⅞	—	29⅞	29⅞	29¼	—	34	34¾	34¾	—	34¼	34¼	34¼	34	34	34	34	34	34	34	34	34	34	34	34	34	35⅛	33⅜
Nov.	34¾	—	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	35⅛	39⅜	34⅞
Dec.	35½	35⅝	36	36⅜	36⅞	37⅝	—	38	37⅝	37⅝	37½	37½	37⅝	37⅝	37⅝	37½	37⅝	38	38⅜	38¾	—	39⅛	38⅞	38⅞	—	38⅞	38⅞	38⅞	39⅜	39⅜	40⅛	37⅞
1925																																
Jan.	—	39⅞	39⅜	—	39	39	39¼	38⅛	38⅝	38⅝	—	37⅞	36½	36⅜	35⅝	35⅞	35⅞	34⅞	34⅜	35	35⅛	35½	36¼	36¼	35⅞	35⅝	35⅝	35⅝	35⅝	35⅞	35⅞	36¾
Feb.	—	35⅜	34⅜	34½	34½	34¼	35⅜	—	—	34¾	35¼	—	35⅞	36	35⅞	36⅞	35⅜	36⅜	36⅜	—	—	37⅜	37⅜	37⅜	37⅜	37⅜	37⅞	37⅞	—	—	—	36
Mar.	—	38⅞	38⅜	38½	38⅝	39¾	39¾	—	39⅜	40¼	40¼	39⅝	40⅜	40⅜	40⅝	40⅞	40½	41	41¼	41	41¾	42⅛	42⅜	42⅜	42⅜	43⅛	43⅜	43⅜	43⅜	44½	42¾	41
Apr.	41¼	41⅞	41¾	41⅝	41¾	42⅜	42⅜	43⅛	43⅜	—	—	57	76⅜	74⅞	71⅞	71⅝	72⅝	73⅜	75½	76¼	77¾	78¼	80½	81½	82½	82½	82½	82½	82½	82½	82½	83
May	45	45⅞	46	46⅞	47¼	47¾	47¾	52½	55⅝	59	59	59¼	74	74	73⅝	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74
June	69½	72	74⅜	76½	75¾	74⅞	74⅞	74⅞	73⅝	74	75¼	76⅜	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞	74⅞
July	81⅞	81⅞	85⅜	95½	88¾	88¾	90½	95¾	94⅜	99¾	106¼	106½	110	105⅝	110⅝	117	116¾	118⅝	121	117⅛	119	117⅝	112¼	112¼	107⅝	107⅝	107⅝	96¾	87⅛	89¾	103¾
Aug.	94⅛	95½	88¾	88¾	85¾	86¾	81⅜	79	—	71¾	72¼	76½	81½	80¾	77¾	—	78¼	80½	83½	82½	83½	82½	82½	82½	85¼	85¼	85¼	85¼	91½	90	88
Sept.	88¾	87¾	85	81¾	81¼	81¼	—	78¾	80½	83	86½	92	92¼	93½	93¾	93¾	92¾	92¾	94¼	92	92	93½	93½	93½	89	89	89	89	89	91¼	91¼	88⅞
Oct.	91¼	91¾	92	—	94½	97	97½	99	99½	101	—	97¼	97½	95½	97	99	99¼	99	99	101¼	102	99	99¼	99¼	98	99¼	99¼	99¼	101½	100¼	100¼	98
Nov.	99¼	99¾	—	98¾	98½	100	100¼	—	98¼	99½	100¾	101¾	104½	105½	—	107	109	109¾	110¾	110½	110½	110	109	109	106¼	106¼	108¼	108¾	107	107	104¾
Dec.	106¾	108½	107¾	107¾	108¼	—	108	109	109¾	106	105½	105½	—	101	99¼	90¼	93	88¼	86¾	—	88¼	90¼	88¾	88¾	—	—	91	93	91¼	91¼	98½
1926																																
Jan.	—	—	—	87	87¼	85¼	86½	87¼	87¾	—	88¼	88¾	88¾	85½	84½	82½	82½	75½	75½	75½	75	72	72½	—	68	66½	67	69¾	70⅛	69	—	79½
Feb.	67½	66¾	66¾	68	69	69	—	69	67	65	66	66	65¾	65	61	60½	60	60	59	60	—	56	55	55	52	51¼	51	—	—	—	—	62¼
Mar.	55	53	53¾	53¾	53¼	57¼	—	56	55½	61	62	63	61½	61½	62	62	61	62	61	61½	61½	61	60	60	59½	60	48	59½	58½	58	58	59
Apr.	59	—	59	59	59	58	56½	56½	53	53	53	51½	50½	48½	47½	48½	47	47	48½	48	47¼	48	48	48	48	48	48	48	48½	49	—	51¼
May	48¼	—	50¼	49¼	49¼	49¼	49¼	49½	—	49½	49	49	48½	47½	47½	—	47	47½	47½	47½	47½	46¾	46¾	46	45	45	45	45	42	42	42	47¾
June	41¾	42	41½	42	41½	—	41½	42	43	41¾	42	43	—	43	43	43	43	43	43	43	44	44	43½	43	43	42	42	42	42	42	42	42½
July	42	43	43	42	41½	41½	41½	41½	41¾	41½	41½	41½	41½	41½	41½	40	40	40	40	40	40	41	41½	41½	41½	41	41	41	41	39¾	39	41¼
Aug.	—	38¾	38½	37	—	38¼	39	40¼	38¾	37¾	37½	37½	37½	37½	37½	—	38	39	39	39	41	41¾	39	39	39	39	39	39	39½	40	39	38½
Sept.	40¼	40¼	40¼	—	42¾	42¾	42½	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40½	40¼	40¼	40½	40½	40½	40½	42¼	42	42¼	42½	42¾	42¾	42¼	42¼	42½	41	42½
Oct.	43	43	—	43¾	42¾	42¾	42½	42½	42½	—	—	—	—	—	42⅝	43	43¼	42⅝	42⅝	42⅝	42⅝	42⅝	42⅝	42½	42½	42½	42½	42½	42½	42½	—	—
Nov.																																
Dec.																																

Automobile Production

	Passenger Cars			Trucks		
	Total	United States	Canada	Total	United States	Canada
1920	1,883,158	1,799,522	83,636	322,039	311,531	10,508
1921	1,514,000	1,452,902	61,098	147,550	142,402	5,148
1922	2,397,827	2,302,923	94,904	251,434	244,285	7,149
1923	3,719,164	3,589,936	129,228	378,288	361,078	17,210
1924						
January	293,824	283,983	9,841	30,785	29,038	1,747
February	343,460	331,388	12,072	32,974	31,295	1,679
March	357,045	341,851	15,194	36,505	34,466	2,040
April	346,405	331,957	14,448	38,037	36,104	1,933
May	286,324	271,033	15,291	35,408	33,655	1,753
June	225,079	214,322	10,757	29,135	28,185	950
July	244,544	235,925	8,619	26,448	25,341	1,107
August	255,232	249,796	5,436	28,714	27,834	880
September	263,528	256,940	6,588	32,015	30,663	1,351
October	260,881	254,524	6,357	32,533	31,263	1,270
November	204,343	198,381	5,962	27,956	26,875	1,081
December	182,099	174,899	7,200	27,596	25,906	1,690
Total	3,262,764	3,144,999	117,765	378,106	360,625	17,481
1925						
January	212,921	204,620	8,301	28,198	26,633	1,565
February	252,803	242,024	10,779	34,467	32,774	1,693
March	332,154	319,140	13,014	45,168	43,079	2,089
April	391,302	375,787	15,515	47,898	46,322	1,576
May	382,714	364,363	18,351	43,380	41,492	1,888
June	364,806	350,557	14,249	38,141	36,347	1,794
July	358,554	347,414	11,140	41,915	40,070	1,845
August	221,831	214,401	7,430	37,843	36,357	1,486
September	272,425	262,053	10,372	60,452	57,972	2,480
October	406,572	392,651	13,921	46,003	44,309	1,694
November	336,358	327,617	8,741	40,077	37,840	2,237
December	285,199	277,701	7,498	34,477	32,746	1,731
Total	3,817,639	3,678,328	139,311	498,019	475,941	22,078
1926*						
January	284,703	272,922	11,781	33,461	29,763	3,698
February	334,524	319,763	14,761	41,685	37,608	4,077
March	399,105	381,116	17,989	49,233	44,848	4,385
April	401,836	383,907	17,929	53,887	50,314	3,573
May	394,569	373,140	21,429	51,343	47,838	3,505
June	358,360	339,542	18,818	47,043	44,110	2,933
July	328,816	315,863	12,953	41,847	39,592	2,255
August		379,111			45,283	
September						
October						
November						
December						

*Revised Figures

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

	1921	1922	1923	1924	1925	1926
January	5,045	16,938	30,106	29,058	29,638	32,196
February	5,955	14,767	30,149	25,736	29,761	31,136
March	9,190	21,408	36,629	28,385	33,498	32,936
April	13,084	19,294	29,085	27,129	34,139	32,696
May	16,023	23,246	36,155	25,845	35,322	29,364
June	16,142	31,713	24,272	22,753	35,822	28,598
July	18,310	24,522	17,685	23,396	36,053	27,577
August	23,649	29,361	20,359	28,962	35,909	34,444
September	16,705	24,410	17,594	31,497	31,691	32,904
October	16,814	26,881	21,321	31,520	29,047	
November	14,105	24,950	20,437	27,289	28,853	
December	15,482	25,070	21,902	27,199	28,748	
TOTALS	170,504	282,560	305,694	328,769	388,481	

Monthly statistics covering shipments of various classes of rubber goods from the United States may be secured free of charge from the Rubber Division, Bureau of Foreign & Domestic Commerce, Washington, D.C.

Est. 1900 Inc. 1919

THE KUHLKE MACHINE CO.

Formerly Jones & Kuhlke

AUTOMOBILE TIRE MOLDS and CORES

GENERAL MACHINE WORK

Akron, Ohio

THE I. B. KLEINERT RUBBER CO.

is Headquarters for

Dress Shields	Reducing Garments	Powder Puff Pockets
Guimpes	Rubber Sheetings	Tourist Cases
Baby Pants	Hose Supporters	Bibs
Crib Sheets	Household Aprons	Dress Protectors
Bathing Caps	Shirtastic Ribbon	Sanitary Goods

GUARANTEED Kleinerts

REG. U. S. PAT. OFF.

I. B. KLEINERT RUBBER CO., 485 Fifth Avenue, New York

SINCE 1880

Rand

GUARANTEED

RUBBER GOODS

"They Last Longer"

Reg. U. S. Patent Office

RANDPRINT APRONS

Dress Shields	Guimps and Brassieres
Rubber Sheetings	Rubber Aprons
Bunny Baby Pants	Pure Rubber Sheets
Sanitary Aprons	Rubber Bibs
Sanitary Elastic Belts	Crib Sheets
Sanitary Bloomers	Bathing Caps
Sanitary Stepins	Rubber Specialties
Powder Puff Pockets	Rubberized Sheeting
Rubber Gloves	Hot Water Bottles

RANDPRINT RUBBER SHEET GUM cut to pattern for manufacturers.

Special Goods To Order

Made by

RAND RUBBER CO., INC.

Formerly Brooklyn Shield & Rubber Co.

Sumner Ave. & Halsey St., Brooklyn, N. Y., U. S. A.

"Factice is used by manufacturers of rubber goods to compound with crude rubber in producing the finest rubber articles. For this purpose Factice plays an important role as it possesses the quality of prolonging the life of the compound and of producing a smooth, velvety finish with attendant advantages of making the grinding and mixing of the compound easier for the man at the mill."

Extract from Stamford Advocate.

RUBBER FACTICE OF HIGHEST QUALITY THE STAMFORD FACTICE STAMFORD CONN THE STAMFORD RUBBER SUPPLY CO

AKRON-WILLIAMS A-W PRODUCTS

Heater Presses
Molds and Cores
Tubing Machines

THE WILLIAMS FOUNDRY & MACHINE CO.

"In Business Since 1888"

AKRON, OHIO

RUBBER DRYERS

The Hunter Process

in

The Carrier Ejector System Dryer

The successful drying of Rubber is essentially a problem of humidity control. The patented Hunter Process is used exclusively in Carrier Dryers. Carrier automatically controlled dryers reduce time space and milling costs.

Write concerning your problem

Carrier Engineering Corporation

750 Frelinghuysen Ave., Newark, N. J.

The CARTER BELL MFG CO

CARTER BELL STANDARD SINCE 1903 RUBBER SUBSTITUTES

150 Nassau Street New York

REVIEW DESK

RUBBER GOODS EXPORTERS' MANUAL: MECHANICAL RUBBER GOODS. 100 pp. Loose leaf binder. Rubber Division, Department of Commerce, Washington.

This, the first edition of a manual on export trade in rubber belting, hose and packing, contains current statistical data designed to furnish exporters with a handbook summarizing American trade in these commodities with each foreign market. Although much of the information given is drawn from official sources, some of the foreign statistics have been secured through a fund established by the Rubber Association of America.

Information dealing with each country is arranged in a definite order, and not only an outline of this arrangement, but an index is provided to the one hundred different territories given treatment. Each class of manufactures is introduced by a summary of world trade in the particular commodity.

Space has been left in the binder for entry of the 1926 export statistics when they are supplied by the Rubber Division. The contribution of supplementary information by American exporters of mechanical rubber goods is expected and will be welcomed by the Division.

• • • •

REPORT OF A SURVEY OF TRANSPORTATION ON THE STATE HIGHWAY SYSTEM OF CONNECTICUT. 86 pp. and Appendices. 8½″ x 11″. By the Bureau of Public Roads, U. S. Department of Agriculture, and the Connecticut State Highway Department. Government Printing Office, Washington. 30 cents.

The rubber manufacturer will undoubtedly find greatest interest in the section devoted to motor truck loading practices in this pretentious report. A table shows that pneumatic tires are used on 99 per cent of the ½-ton trucks in Connecticut; on 96.9 of the ¾-ton trucks; 88.1 of the 1-ton; 55.9 of the 1½-ton and 23.8 of the 2-ton. The trucks of larger capacity are mainly equipped with solid tires on both front and rear wheels, although there is some usage of combinations of the two types, with solids on rear wheels and pneumatics on front wheels. Pneumatic-tired trucks and the last-named class are not as heavily loaded as those equipped all around with solid tires.

The majority of pneumatic-tired trucks—84.5 per cent—make average trips of less than 40 miles. Of the solid-tired trucks, 58.8 per cent travel less than 40 miles; and of all trucks with the three types of tire equipment, 3.5 per cent of the pneumatic-tired, 12.9 per cent of the solid-tired, and 24 per cent of those equipped with a combination of solid and pneumatic tires, travel 100 miles or more at a trip.

Statutes of Connecticut prohibit gross weights in excess of 25,000 pounds, provide that the weight of trucks equipped with solid tires shall not exceed 800 pounds per inch width of tire, channel measurement, and that no commercial vehicle shall be loaded so that the weight on one axle is less than 20 per cent of the gross weight of vehicle and load. The statutes also provide the following minimum tire thickness for solid truck tires: 5 inches or less, ⅞ inch thick; 6 to 8, 1 inch; over 8 inches, 1⅛ inch.

• • • •

STATISTICAL SUMMARY OF REFINED PRODUCTS IN THE U. S. 1916-25. 18 pp. By G. R. Hopkins, petroleum economist. Bureau of Mines, Dept. of Commerce.

Although a report combining all past figures for the period 1916-25 in the oil refining industries is now nearing completion, it will be some time before it will be available in printed form. Therefore, the above summary has been compiled for use until the complete report is issued. The output of gasoline by districts and years is useful in making comparisons with consumption figures and the stocks by districts and years of gasoline are also useful, but rubber manufacturers will find the growth of domestic demand for gasoline by years and months of most interest. Consumption in 1925 totaled 223,865,000 barrels of 42 gallons each, compared with 1924 consumption of 185,003,000 and a consumption in 1917 of 56,313,000 barrels.

INDEX TO ADVERTISERS

A

Adamson Machine Co. 150
Akron Equipment Co. 152
Akron Rubber Mold & Machine Co. 152
Akron Standard Mold Co., The 152
American Cyanamid Co. 144-150

B

Baird Rubber & Trading Co. 140
Banner Machine Co., The 150
Becker, Moore & Co., Inc. 154
Binney & Smith Co. 118-148
Bullock & Sons, Inc., E. L. 152

C

Cabot, Inc., Godfrey L. 148
Cameron Machine Co. 121-154
Carrier Engineering Corp. 150-156
Carter-Bell Manufacturing Co., The 154-156
Cleveland Equipment & Engineering Co. 121
Cleveland Liner & Mfg. Co. 152-159
C/M Company of America 154
Colledge, E. W. 116-152
Continental Rubber Co. 128-150

D

Damascus Mnfg. Co. 150
Defiance Rubber Co. 116-152
Dovan Chemical Corp. 148
du Pont de Nemours & Co., E. I. 107-148

F

Fisk Rubber Co. 109-154

G

General Tire & Rubber Co. 154
Gibraltar Rubber Corp. 150
Grasselli Chemical Co. 148
Gray & Co., Wm. S. 146-154

H

Hall Co., The C. P. 144-152
Harshaw, Fuller & Goodwin Co. 116-152
Henderson Bros. Co., Inc. 142-150
Henderson, Helm & Co., Inc. 142-150
Huber, J. M., Inc. 117-148

I

International Pulp Co. 121-148

J

Jones, H. Frank 150

K

Kleinert Rubber Co., I. B. 154-156
Kuhlke Machine Co. 152-156

L

Lane, J. H. & Co. 147-150
Lawrence & Co. 150
Lowe Co., The Clyde E. 116-152

M

Maywald, Fred'k. J. 152-154
McNulty, Joseph A. 152
Moore & Munger 148
Muehlstein & Co., Inc., H. 146-152

N

National Standard Co. 146-148
Naugatuck Chemical Co. 119-150
New Jersey Zinc Sales Co. 154-160
Norton & Co., M. 154

P

P. & B. Rubber Mfg. Co. 152
Pequanoc Rubber Co. 144-152
Philadelphia Rubber Works Co. 120-152

R

Rand Rubber Co., Inc. 154-156
Rare Metal Products Co. 148
Roessler & Hasslacher Chemical Co., The 148
Royle & Sons, John 122-154
Rubber Regenerating Co. 106-152
Rubber Service Laboratories Co., The 148

S

Southwark Mfg. Co. 154
Spadone Machine Co. 148
Stamford Rubber Supply Co. 150-156
Stauffer Chemical Co. 124-154
Stoker, F. William 152

T

Textile Finishing Machine Co., The 146-148

U

U. S. Rubber Co. 154-158
U. S. Rubber Reclaiming Co. 110-152

V

Vanderbilt, R. T. Co. ..... Front Cover-150

W

Weber, Herman 154
Williams Foundry & Machine Co., The 152-156
Wilson Co., C. T. 138-142-150
Wishnick-Tumpeer, Inc. 122-150

X

Xylos Rubber Co., The 152

The Market Place 148-150-152-154

TRADE MARK

United States Rubber Company

MAIN OFFICE:

1790 Broadway, New York

Fifty-Three Factories
Branches in all Principal Cities

Manufacturers of All Classes of Rubber Goods, including—

"U. S." ROYAL CORD AND USCO BALLOON TIRES
"U. S." ROYAL CORD AND USCO CORD TIRES
"U. S." ROYAL CORD MOTORCYCLE BALLOON TIRES
"U. S." ROYAL CORD MOTORCOACH TIRES
"U. S." ROYAL CORD HEAVY SERVICE TIRES
"U. S." HEAVY DUTY CUSHION, CUSHION, and
HIGH SIZE CUSHION SOLID TRUCK TIRES
"U. S." ROYAL, GREY, AND USCO TUBES
"U. S." BICYCLE TIRES, REPAIR MATERIALS, AND ACCESSORIES
"U.S." AUTO TOP MATERIALS "U. S." SPRING-STEP RUBBER HEELS USKIDE SOLES
"U. S." RUBBER FOOTWEAR KEDS SNUG-LER FELT FOOTWEAR
"U. S." RAYNSTER RAINCOATS BELTING—PACKING—HOSE HARD RUBBER PRODUCTS
"U. S." TILE FLOORING USCO SHEET FLOORING NAUGAHYDE LUGGAGE
"U. S." ROYAL GOLF BALLS "U. S." DRUGGIST SUNDRIES
"U. S." PARACORE INSULATED WIRE AND CABLE
"U. S." BATHING APPAREL

United States Rubber Export Co., Ltd.

Exporters of the Products of

United States Rubber Company

AND

Dominion Rubber Company, Limited

MAIN OFFICE:

1790 Broadway, New York, U. S. A.

Branches and Distributing Agencies in all leading cities of the World

BLUE PROCESSED LINERS

"Have found none as satisfactory."

—Customer.

THE CLEVELAND LINER & MFG. CO.

5508 MAURICE AVE.

CLEVELAND, OHIO

AIR BAGS!

How many "heats" per bag?

Records in Air Bag service have been made with compounds containing 70% zinc oxide by weight

*(RUBBER TESTED!)

The New Jersey Zinc Company

Established 1848

Products Distributed by

The New Jersey Zinc Sales Company

160 Front Street, New York City

CHICAGO • PITTSBURGH • CLEVELAND • SAN FRANCISCO